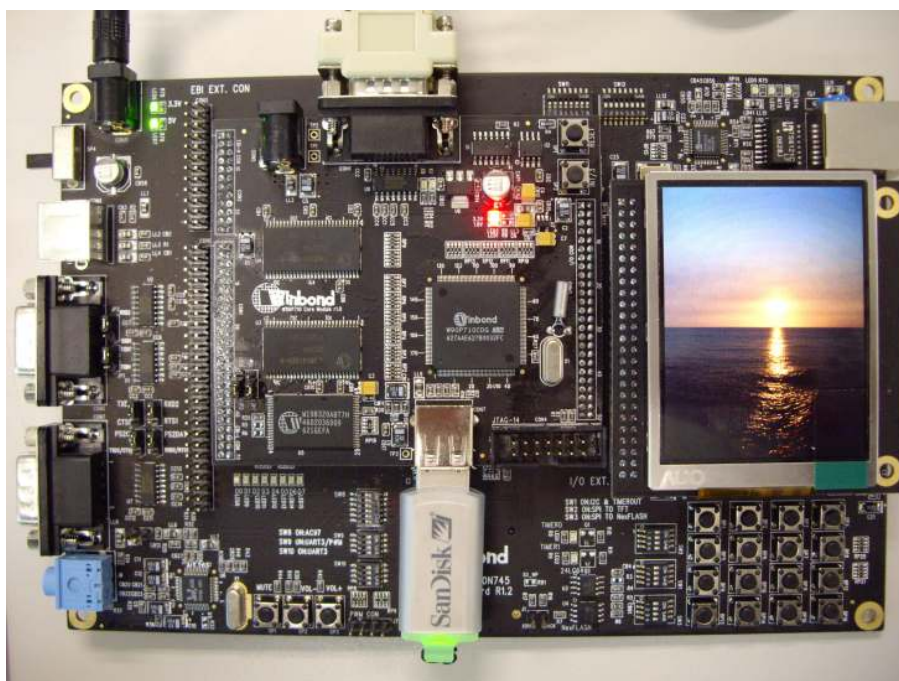


# NUC710 Evaluation Board User manual



*The information described in this document is the exclusive intellectual property of Nuvoton Electronics Corporation and shall not be reproduced without permission from Nuvoton.*

*Nuvoton is providing this document only for reference purposes of NUC710-based system design. Nuvoton assumes no responsibility for errors or omissions.*

*All data and specifications are subject to change without notice.*

*.For additional information or questions, please contact: Nuvoton Electronics Corp.*



**EVB USER MANUAL****Revision history**

VERSION	DATE	PAGE	DESCRIPTION
A	FEB 06, 2006	-	Initial Issued
B	MAR 08, 2006	-	Update
C	July 20, 2006	-	Add AUO TFT panel information
D	Feb 12, 2007	-	Update RMII/USB information and pictures
E	Apr 6,2009	-	Change part number to NUC710

### Table of Contents-

1.	OVERVIEW .....	1
1.1	Features.....	2
1.2	System Architecture.....	5
1.2.1	Core module board function block .....	5
1.2.2	Application board function block .....	6
2.	BOARD CONFIGURATION .....	7
2.1	Core Module configuration.....	7
2.1.1	System Clock Source selection (JP1) .....	7
2.1.2	Endien Mode selection (JP2) .....	7
2.1.3	Boot Flash type selection (R5, R6).....	8
2.1.4	Reset Button (SP1) .....	8
2.2	Application board configuration.....	9
2.2.1	UART1/UART2/PS2 selection (JP1~JP6) .....	9
2.2.2	UART3/AC97/PWM selection (SW8~SW10) .....	10
2.2.3	I2C/SPI/TIMER-OUT selection (SW1~SW3).....	11
2.2.4	KPI/RMII settings (SW11~SW14) .....	12
2.2.5	SMC/SD selection (SW4~SW7).....	13
3.	CIRCUIT DESCRIPTION .....	15
3.1	SDRAM .....	15
3.2	FLASH .....	16
3.3	USB 1.1 Host/Device .....	17
3.4	UART .....	18
3.5	PS/2 .....	20
3.6	LCD interface .....	21
3.6.1	CASIO 2.5" TFT LCD .....	21
3.6.2	AUO 3" TFT LCD module.....	22
3.7	Keypad Interface.....	23
3.8	JTAG Interface.....	23
3.9	Ethernet .....	24
3.10	RTC.....	25
3.11	SPI Interface .....	25
3.12	Timer output.....	26
3.13	I2C .....	26
3.14	SD card interface .....	27

## EVB USER MANUAL

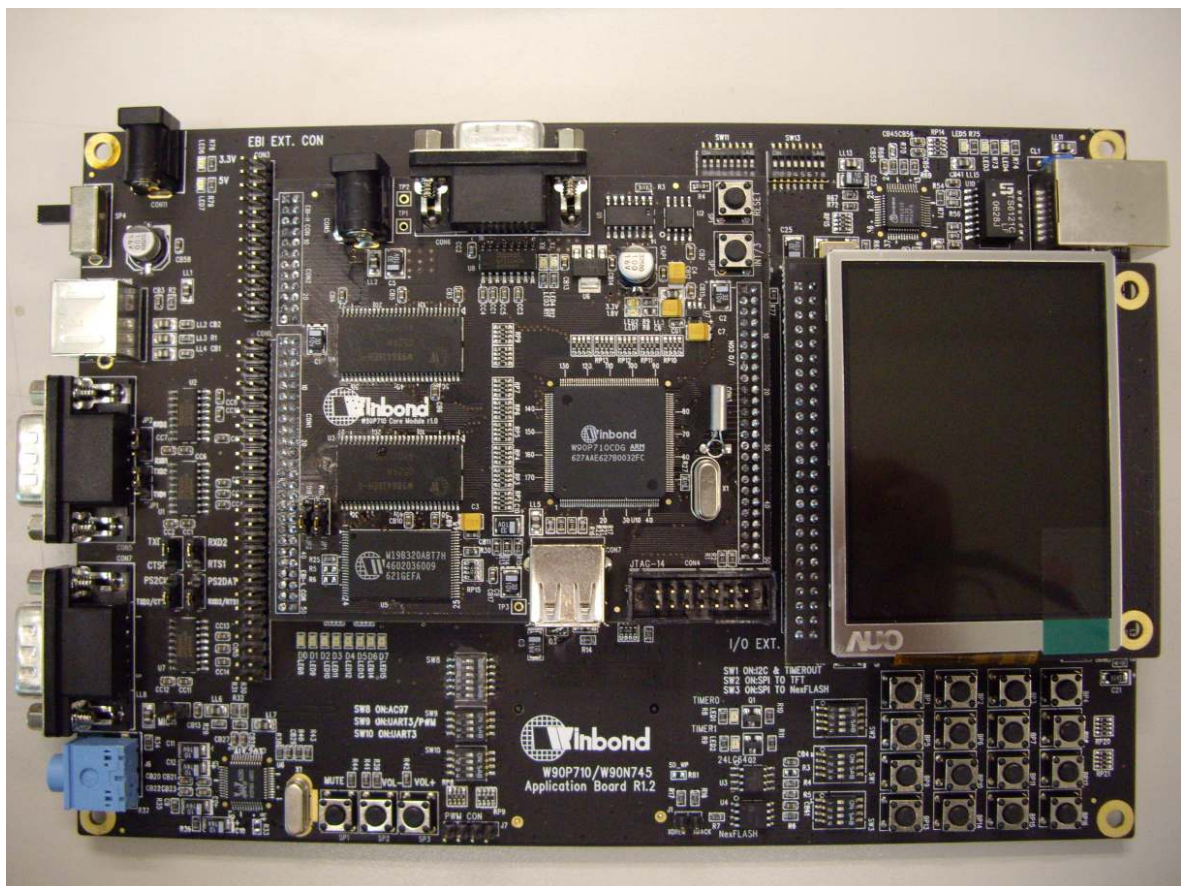
3.15	Ext. DMA interface .....	27
3.16	SMC interface .....	28
3.17	GPIO TEST interface .....	29
3.18	EBI interface .....	30
3.19	LED display .....	31
4.	SCHEMATIC .....	32
4.1	Core Module board .....	32
4.2	Application board .....	41
4.3	AUO TFT panel board .....	55
5.	BOM LIST .....	56
5.1	Core Module board .....	56
5.2	Application board .....	58
5.3	AUO 3" TFT panel module board .....	62



## EVB USER MANUAL

### 1. OVERVIEW

The NUC710 evaluation board consists of a core module and an application board. The core module board consists of ARM7-TDMI core 32-bit MCU NUC710, 16MByte SDRAM, 4MByte NOR FLASH, one RS-232 port for console communication, a USB 1.1 host with USB A type connector and a USB 1.1 device port with USB mini-B type connector. All function is directly supported by NUC710.



Picture 1-1



## EVB USER MANUAL

### 1.1 Features

The NUC710 core module board offers the smallest system for evaluating this chip. It's easily to build up user's application system by using this core module and the application board. For more detail information about NUC710 development platform please refer to below:

#### NUC710 Core Module:

**MCU:** ARM7TDMI-based NUC710 operating up to 80MHz speed.

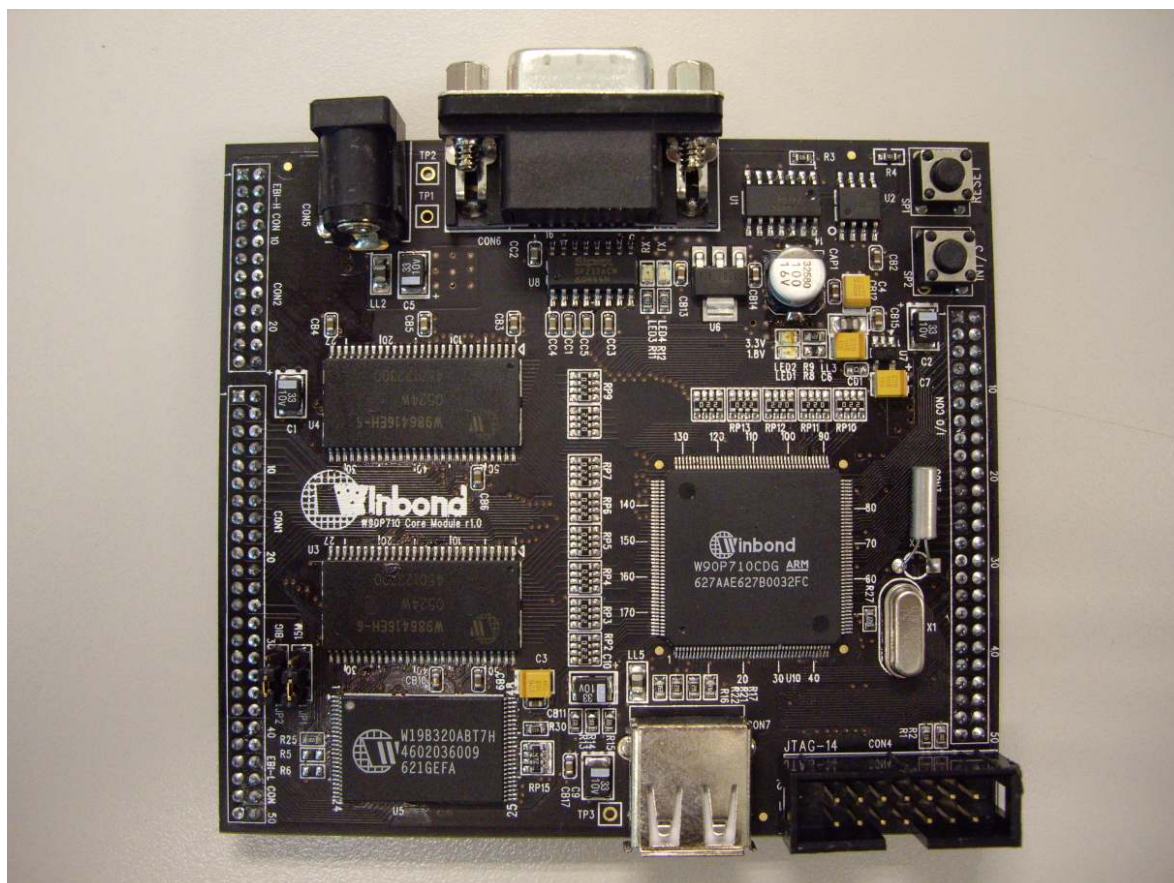
**Boot FLASH:** Board supports up to 8MB (4Mx16) FLASH, one 2MBx16 FLASH onboard.

**SDRAM:** Board supports up to 32MB (8Mx16x2 banks) SDRAM, totally 16MB onboard.

**USB:** One USB1.1 Host + one USB 1.1 device port connector.

**UART:** One TX/RX signals only RS-232 port (UART0) for debug console communication.

**JTAG:** 14-pin header JTAG debug interface.



Picture 1-2



## EVB USER MANUAL

### Application Board:

**Network:** A 10/100Mbps Ethernet port supported with DM9161A by NUC710 RMII interface.

**LCD:** 1.Supports Casio 2.5" 480x240 TFT LCD by NUC710's LCD controller interface.  
2. Supports AUO 3" 960x240 TFT LCD by NUC710's LCD controller interface.

**SD:** Supports 4-bit mode SD memory card interface by NUC710's SD interface

**I2C:** One 64kB EEPROM onboard connected with NUC710's I2C interface.

**Smart card:** Two 7816-3 ports supported by NUC710's SMC controller.

**UART:** Three UART ports supported (Male type) from NUC710.

**PS/2:** One PS/2 port supported by NUC710's PS/2 interface.

**RTC:** Real-time clock supported by NUC710's RTC controller.

**Matrix Keypad:** Supports 2-Row x 8-Col matrix keypad by NUC710's KPI.

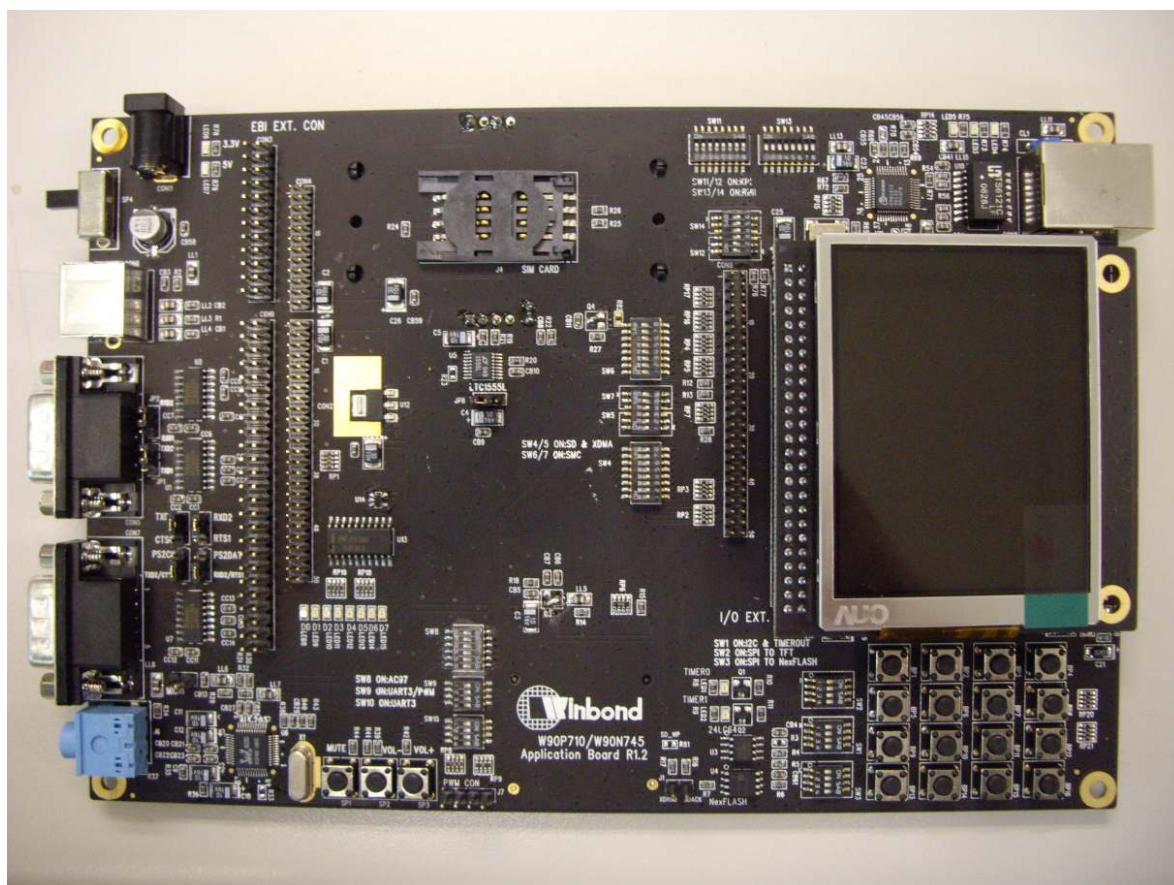
**SPI:** One serial flash connected with NUC710's SPI interface.

**Audio:** Audio-out/in supported with ALC-203 audio codec with NUC710's AC-97 interface.

**LED debug display:** 8-LED display connected with NUC710's EBI bank0.

**PWM:** 4-channel PWM connector supported by NUC710's PWM controller.

**Timer out LED display:** Two LED display connected with NUC710's timer out pins.



Picture 1-3

### 1.2 System Architecture

#### 1.2.1 Core module board function block

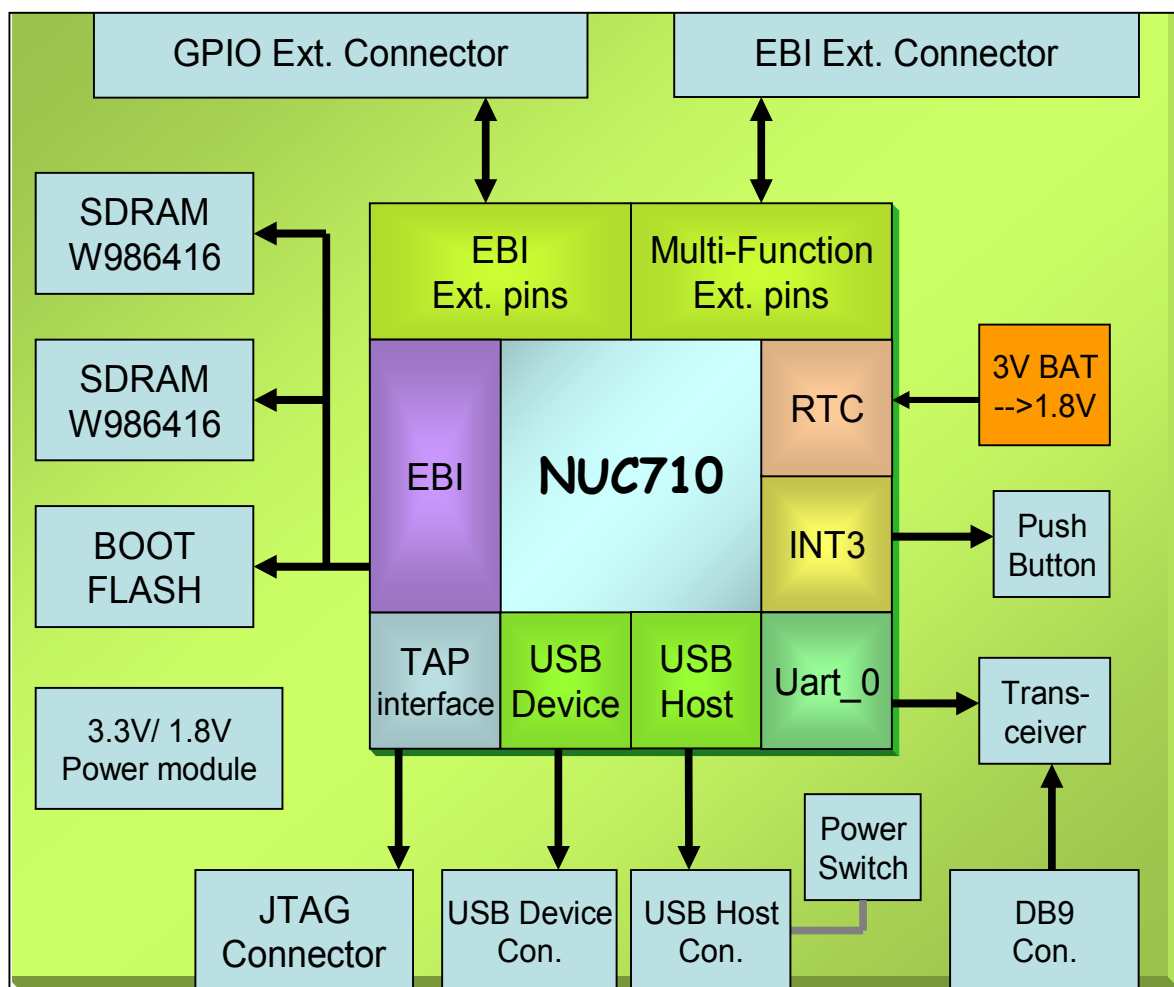


Figure 1-4

### 1.2.2 Application board function block

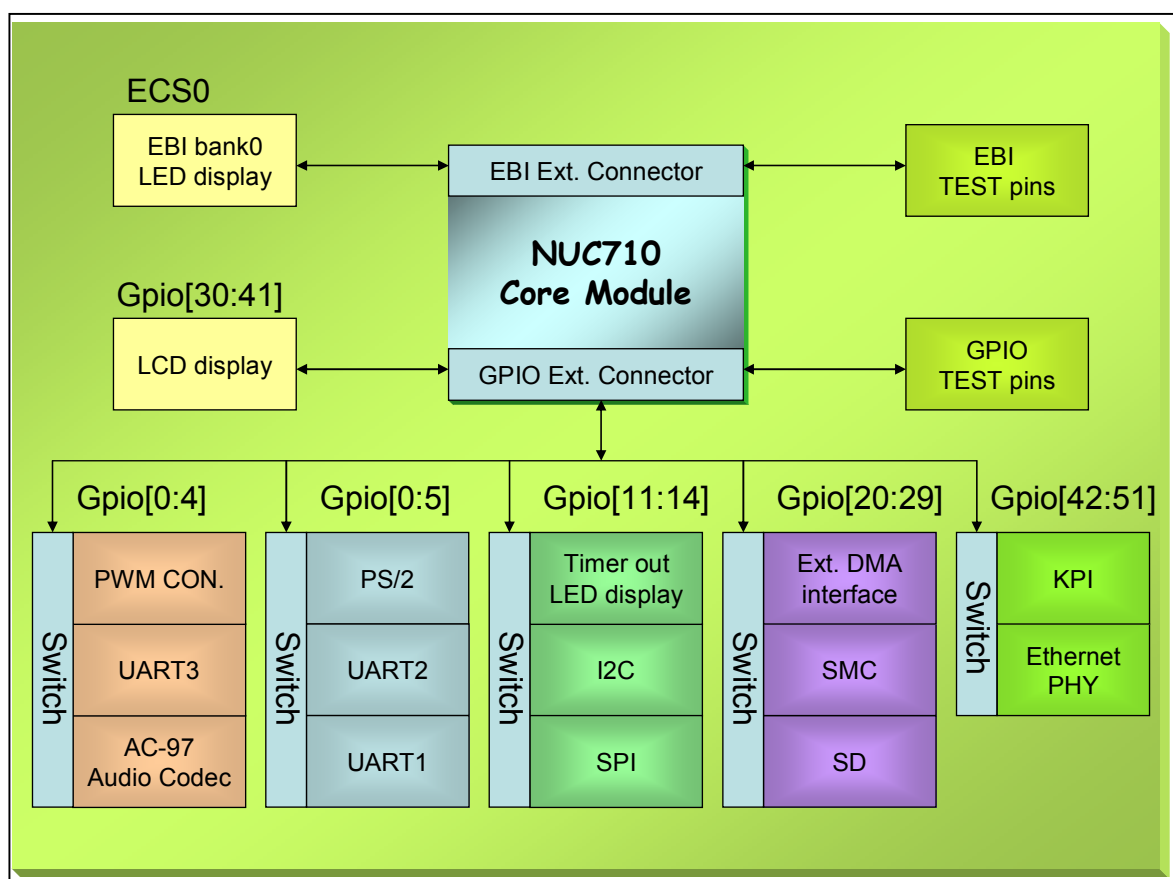


Figure 1-5

## EVB USER MANUAL

### 2. BOARD CONFIGURATION

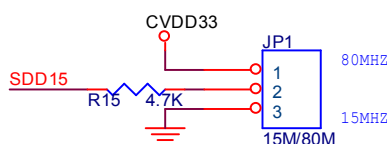
The NUC710 evaluation board has setting with default configuration. You may using this board with the default settings directly. However, it's easy to change the settings according to your requirement. Please notice that and conform to correct settings you want before using this board.

#### 2.1 Core Module configuration

##### 2.1.1 System Clock Source selection (JP1)

The evaluation board supports system clock source selection. To short 1-2 of JP1 (pull-high SDD15) will set the system operating speed to 80MHz (enable internal PLL) or short 2-3 of JP1 (pull-low SDD15) to set the operating speed to the same as external crystal source (disable internal PLL).

JUMPER SETTING	JUMPER	SHORT 1-2	SHORT 2-3
Internal System Clock Select	JP1	Enable PLL(80MHz)	Disable PLL(15MHz)



If pin D15 is pull-up, the PLL output clock is used as internal system clock

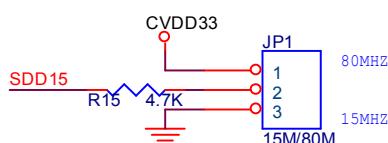
If pin D15 is pull-down, the external clock from EXTAL pin is served as internal system clock.

##### 2.1.2 Endien Mode selection (JP2)

The evaluation board supports system endian mode selection. To short 1-2 of JP2 (pull-high SDD14) to set system operating mode at little endian mode or short 2-3 of JP2 (pull-low SDD14) can set system operating mode at Big endian mode.

JUMPER SETTING	JUMPER	SHORT 1-2	SHORT 2-3
Endian mode Select	JP2	Little	Big

## EVB USER MANUAL



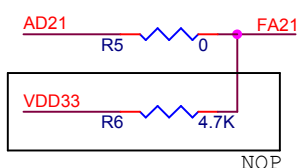
If pin D15 is pull-up, the PLL output clock is used as internal system clock  
If pin D15 is pull-down, the external clock from EXTAL pin is served as internal system clock.

### 2.1.3 Boot Flash type selection (R5, R6)

There are two resistors for Boot Flash type selection. The default setting connected FA21 pin to VDD33 for WINBOND Flash. Connected FA21 to A21 if using AMD Flash and will supported up to 4Mx16 size Flash for Boot Flash bank.

OPTIONAL SELECT	R5	R6	FLASH RYPE
Flash Type	On	Off	AMD
	Off	On	WINBOND

FA21=VDD F for WINBOND FLASH  
FA21=A21 for AMD FLASH  
Default:AMD Flash

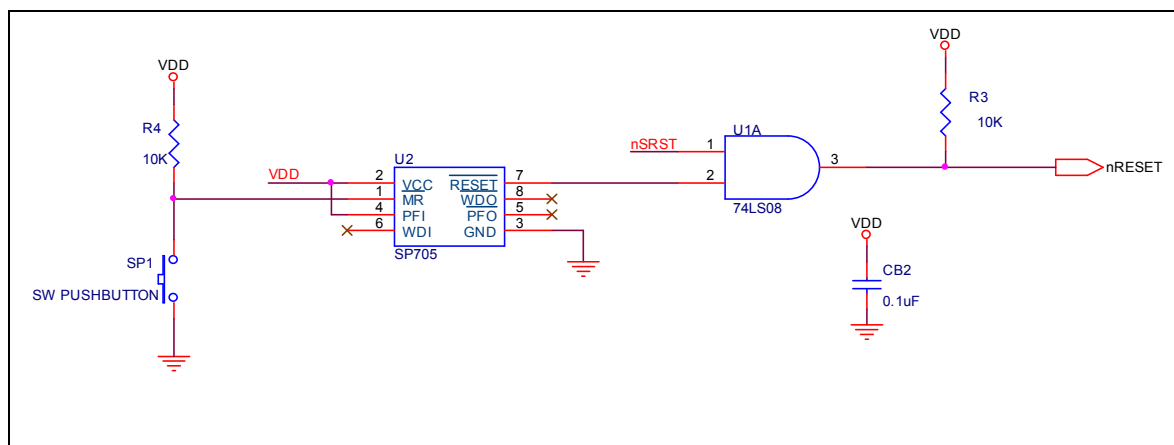


### 2.1.4 Reset Button (SP1)

The push button SP 1 is the system reset button that connected to a reset IC (SP705 S) and it will generate about 200ms low pulse for whole system resetting .

PUSH BUTTON	BUTTON
System Reset	SP1

## EVB USER MANUAL



## 2.2 Application board configuration

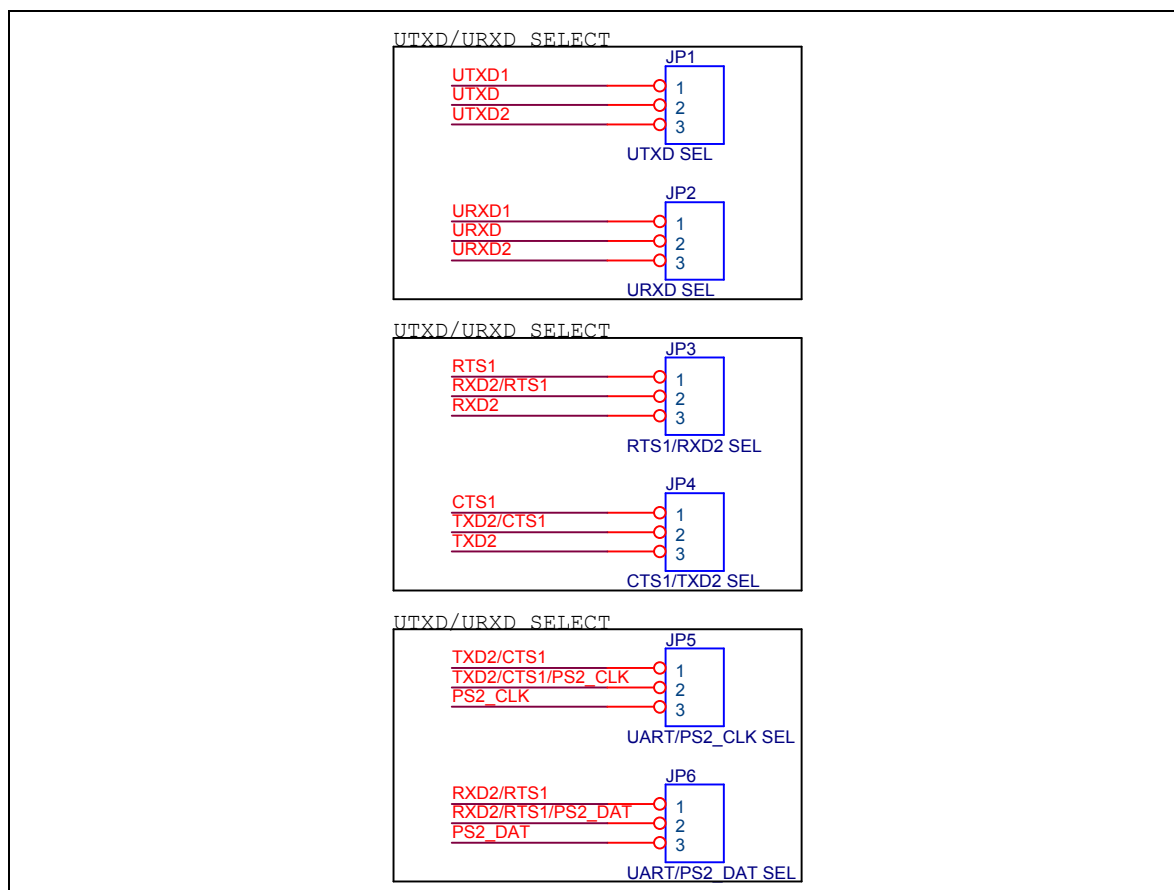
### 2.2.1 UART1/UART2/PS2 selection (JP1~JP6)

NUC710 offers a multi-function port which can supports UART1/2 or PS2 interface by difference settings. To Use PS2 function please short 2-3 of JP5 and JP6, or short 1-2 to choose UART function.

FUNCTION SELECT	JUMPER SETTINGS					
	JP1	JP2	JP3	JP4	JP5	JP6
UART1 (TX/RX)	1-2	1-2	-	-	-	-
UART1 (TX/RX/CTS/RTS)	1-2	1-2	1-2	1-2	-	-
UART2	2-3	2-3	2-3	2-3	1-2	1-2
PS2	-	-	-	-	2-3	2-3



## EVB USER MANUAL

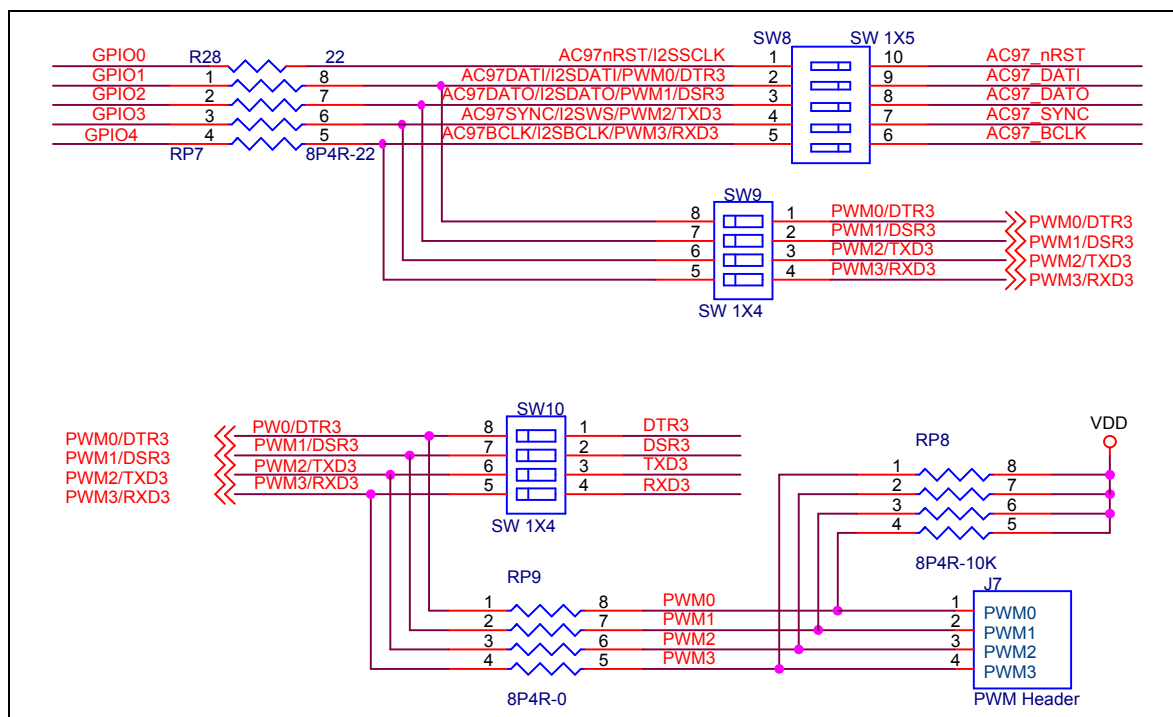


### 2.2.2 UART3/AC97/PWM selection (SW8~SW10)

NUC710 supports a multi-function port which supports UART3 function or AC97 or PWM output by difference settings. Please refer to the following table for more information:

FUNCTION SELECT	SWITCH SETTINGS		
	SW8	SW9	SW10
UART3 (TX/RX/DTR/DSR)	OFF	ON	ON
PWM	OFF	ON	OFF
AC97	ON	OFF	OFF

## EVB USER MANUAL

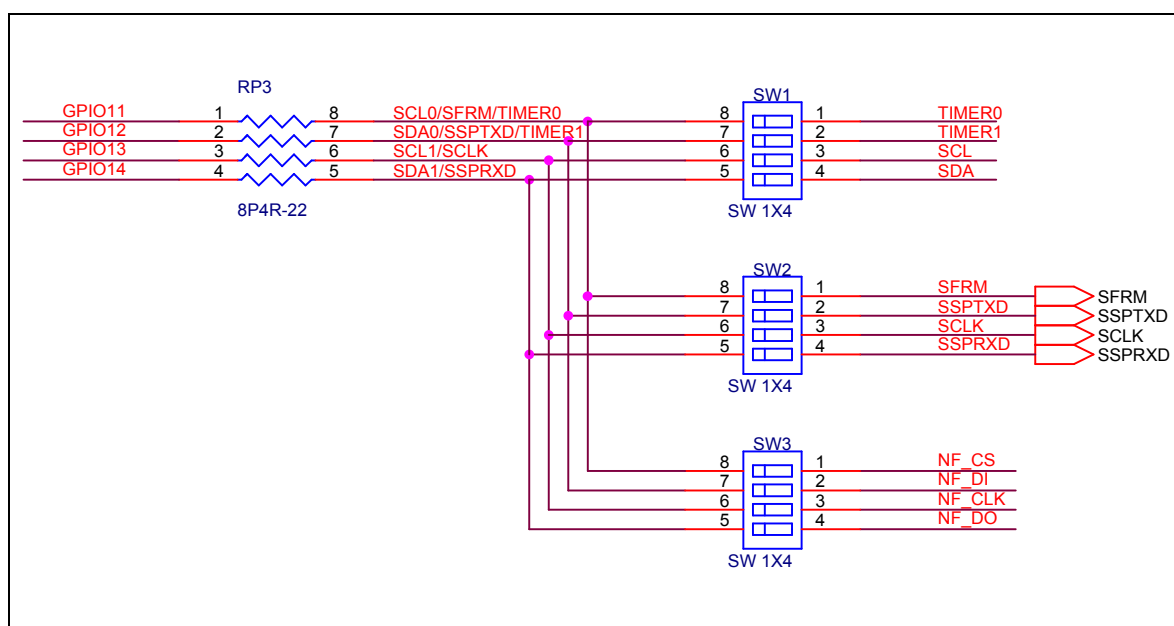


### 2.2.3 I2C/SPI/TIMER-OUT selection (SW1~SW3)

NUC710 supports a multi-function port which can support I2C or SPI or Timer-out function by difference settings. The I2C interface connected to an EEPROM, the SPI interface connected to a serial flash and the timer-out signals connected to LED display. Please refer to the following table for more information:

FUNCTION SELECT	DEVICE	SWITCH SETTINGS		
		SW1	SW2	SW3
I2C	24LC64	ON	OFF	OFF
SPI	CASIO PANNEL	OFF	ON	OFF
	W25P16	OFF	OFF	ON
TIMER OUT	LED	ON	OFF	OFF

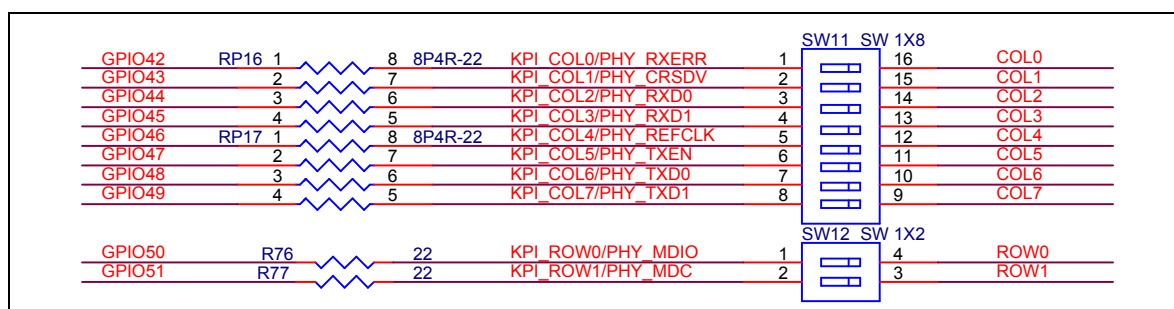
## EVB USER MANUAL



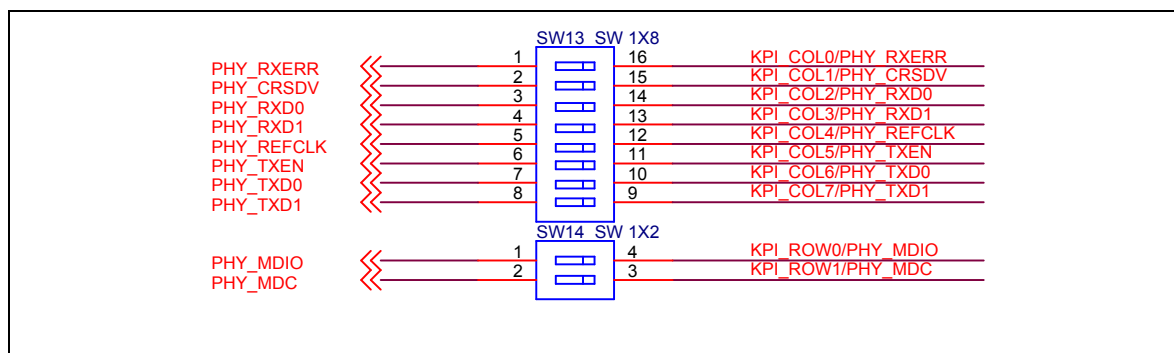
### 2.2.4 KPI/RMII settings (SW11~SW14)

The NUC710 offers a multi-function port which can supports KPI or RMII function by difference settings. The KPI controller for matrix keypad and the RMII is Ethernet communication interface. Please refer to the following table for more information:

FUNCTION SELECT	SWITCH SETTINGS			
	SW11	SW12	SW13	SW14
KPI	ON	ON	OFF	OFF
RMII	OFF	OFF	ON	ON



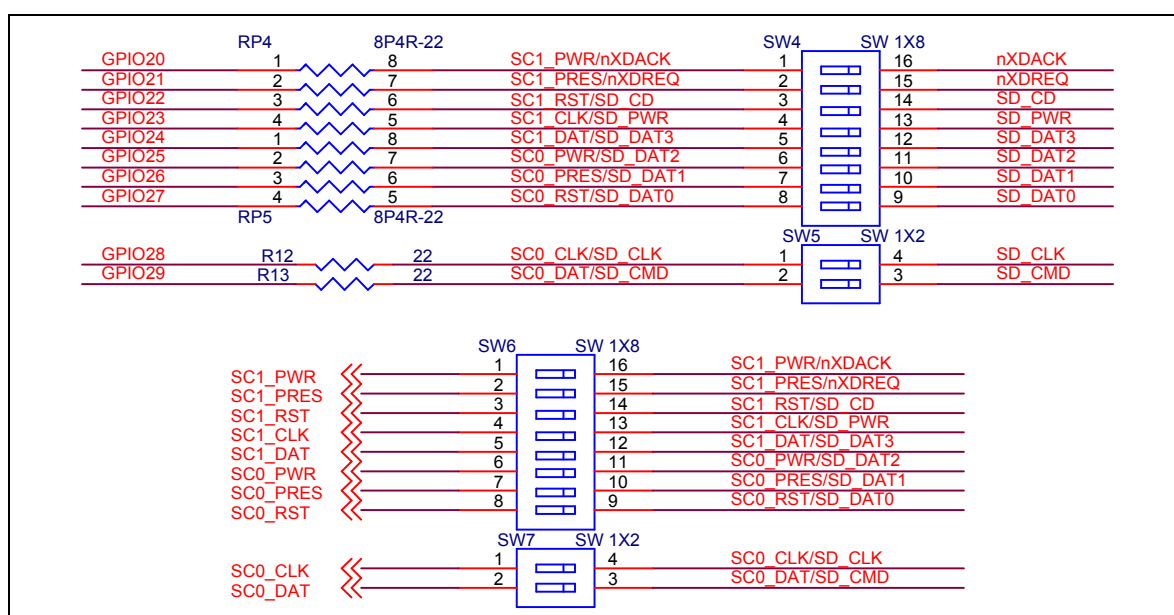
## EVB USER MANUAL



### 2.2.5 SMC/SD selection (SW4~SW7)

The NUC710 offers a multi-function port which can supports smart card and SD memory card by difference settings. The SMC interface can supports up to two smart cards and the SD memory interface can supports one SD memory card. Please see the following table for more information:

FUNCTION SELECT	SWITCH SETTINGS			
	SW4	SW5	SW6	SW7
SMC	OFF	OFF	ON	ON
SD	ON	ON	OFF	OFF

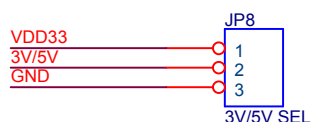


## EVB USER MANUAL

### 2.2.5.1. SMART CARD port0 POWER type selection jumper (JP8)

This development board supports a smart card port0 power type selection Jumper which can choose the smart card port0 supply voltage type supported by smart card power switch LTC1555L. Please see the following table for more detail information.

POWER SELECT	JUMPER SETTING
	JP8
5V	1-2
3V	2-3

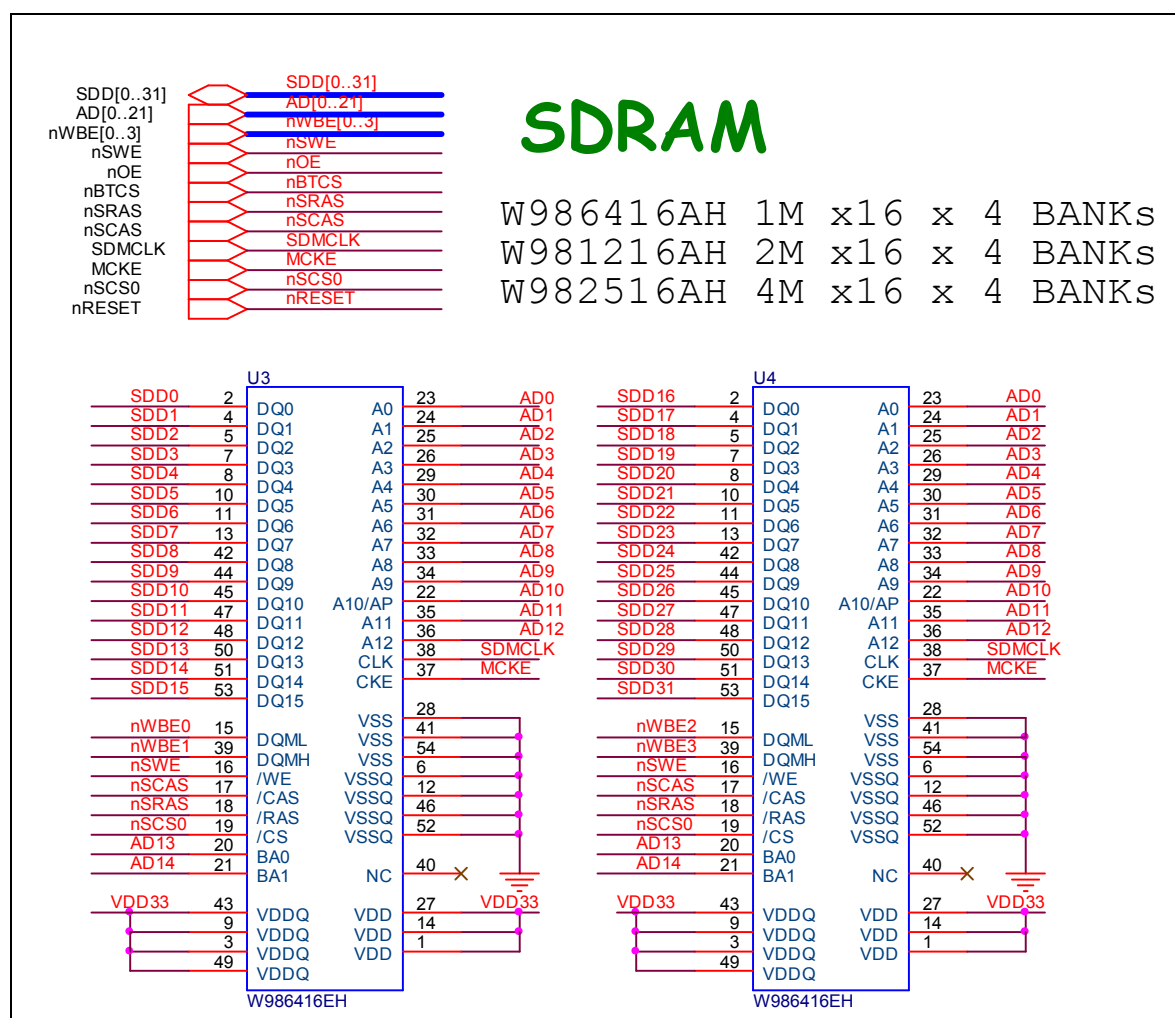


## EVB USER MANUAL

### 3. CIRCUIT DESCRIPTION

#### 3.1 SDRAM

TOTAL SIZE	MEMORY CONFIGURATIONS	BANK	BUS WIDTH	PART NUMBER
16Mbyte	1Mx16x4 Banks	0/1	32-bit	W986416
32Mbyte	2Mx16x4 Banks	0/1	32-bit	W981216
64Mbyte	4Mx16x4 Banks	0/1	32-bit	W982516

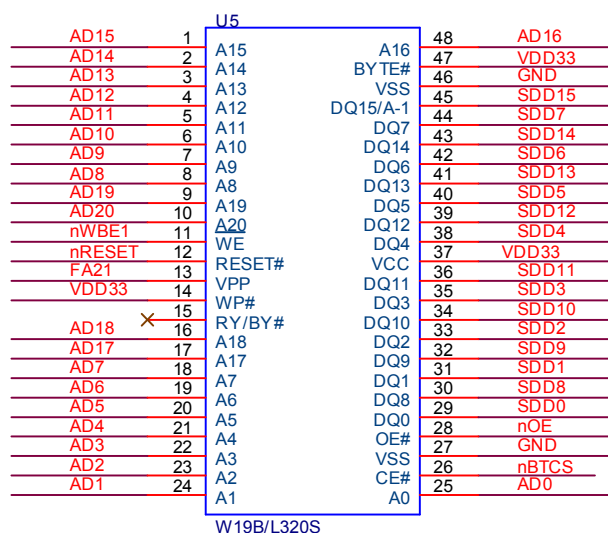
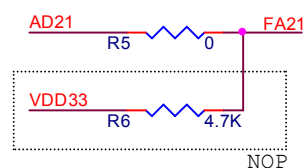


### 3.2 FLASH

TOTAL SIZE	MEMORY CONFIGURATIONS	BUS WIDTH	PART NUMBER
2Mbyte	1Mx16bits	16-bit	W28J160
4Mbyte	2Mx16bits	16-bit	W19L320ABT
8Mbyte	4Mx16bits	16-bit	Am29LV640

## BOOT FLASH

FA21=VDD F for WINBOND FLASH  
FA21=A21 for AMD FLASH  
Default:AMD Flash



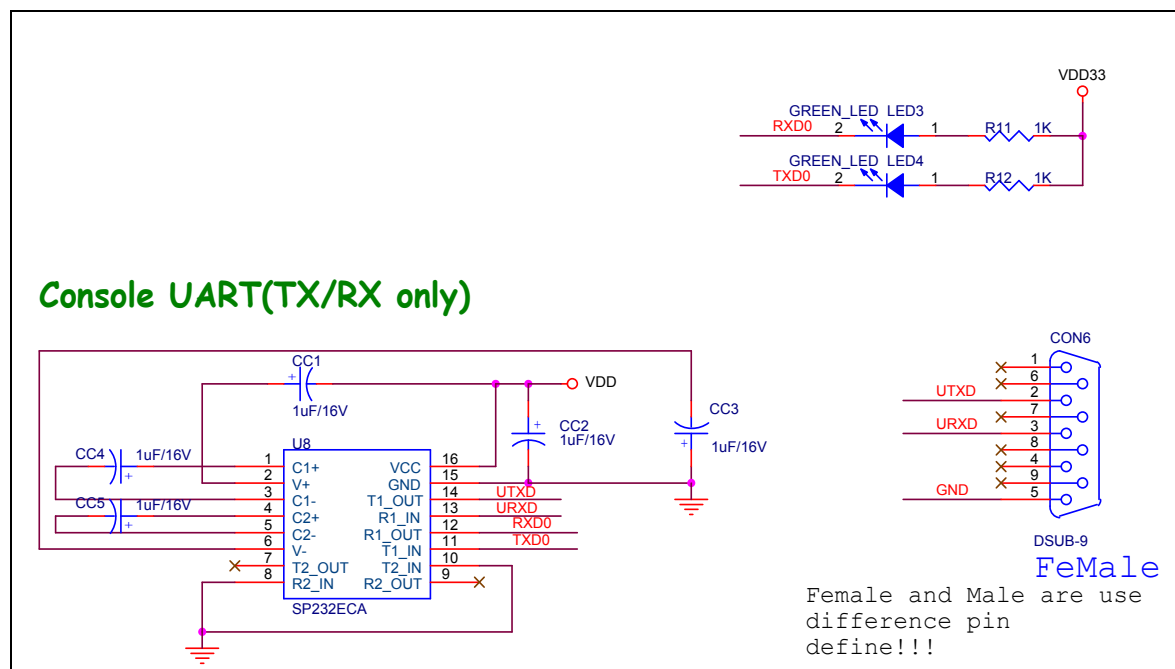
1,2,4MB (up to 8MB AMD FLASH)  
am29LV800B 512Kx16  
am29LV160D 1Mx16  
am29LV320D 2Mx16  
W19B/L320S 2Mx16



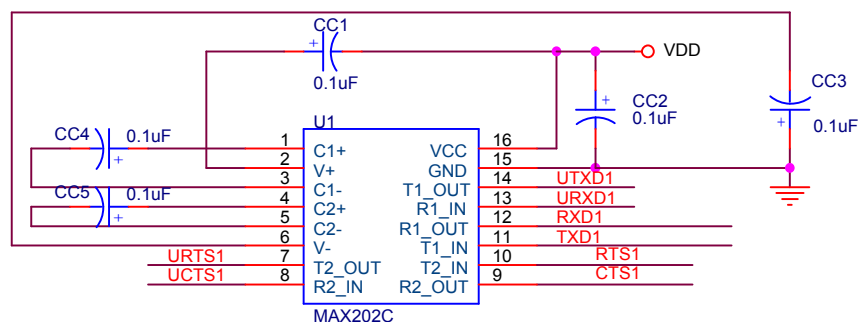


### 3.4 UART

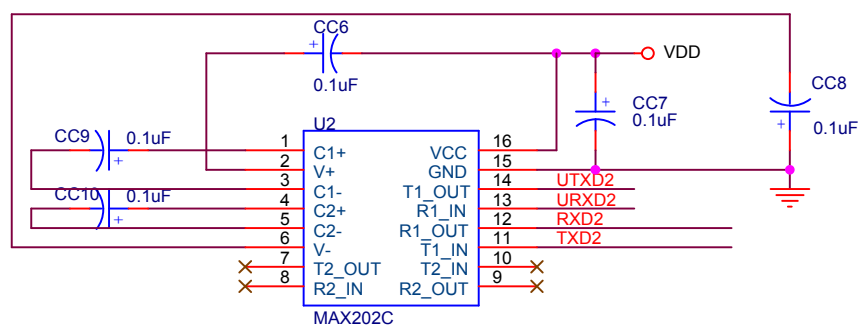
UART PORT	DESCRIPTION
Port 0	CON6 of Core module board(Female Type)
Port 1	CON5 of AP board(Male Type)
Port 2	CON6 of AP board (Male Type)
Port 3	CON7 of AP board (Male Type)



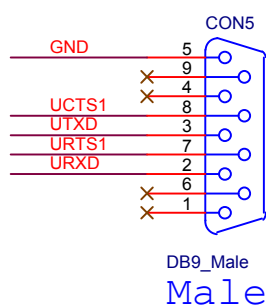
### UART1



### UART2

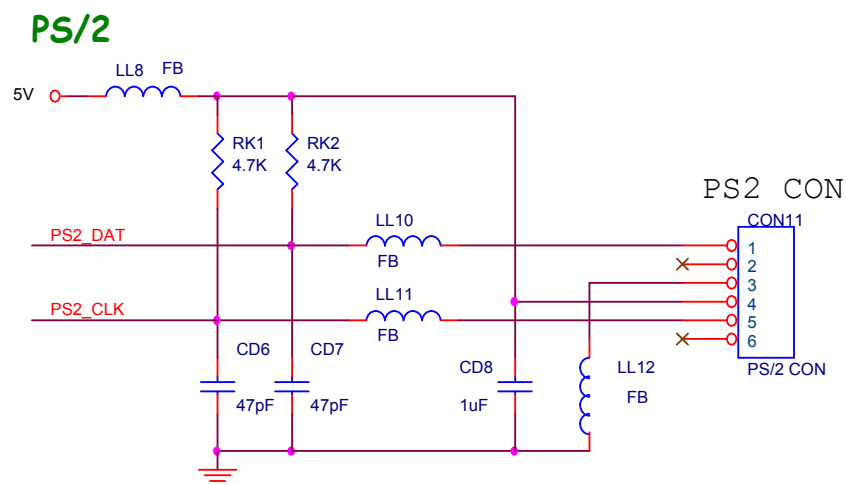


(UART1/2)



GNE  
UDT  
UTX  
URX  
UDS

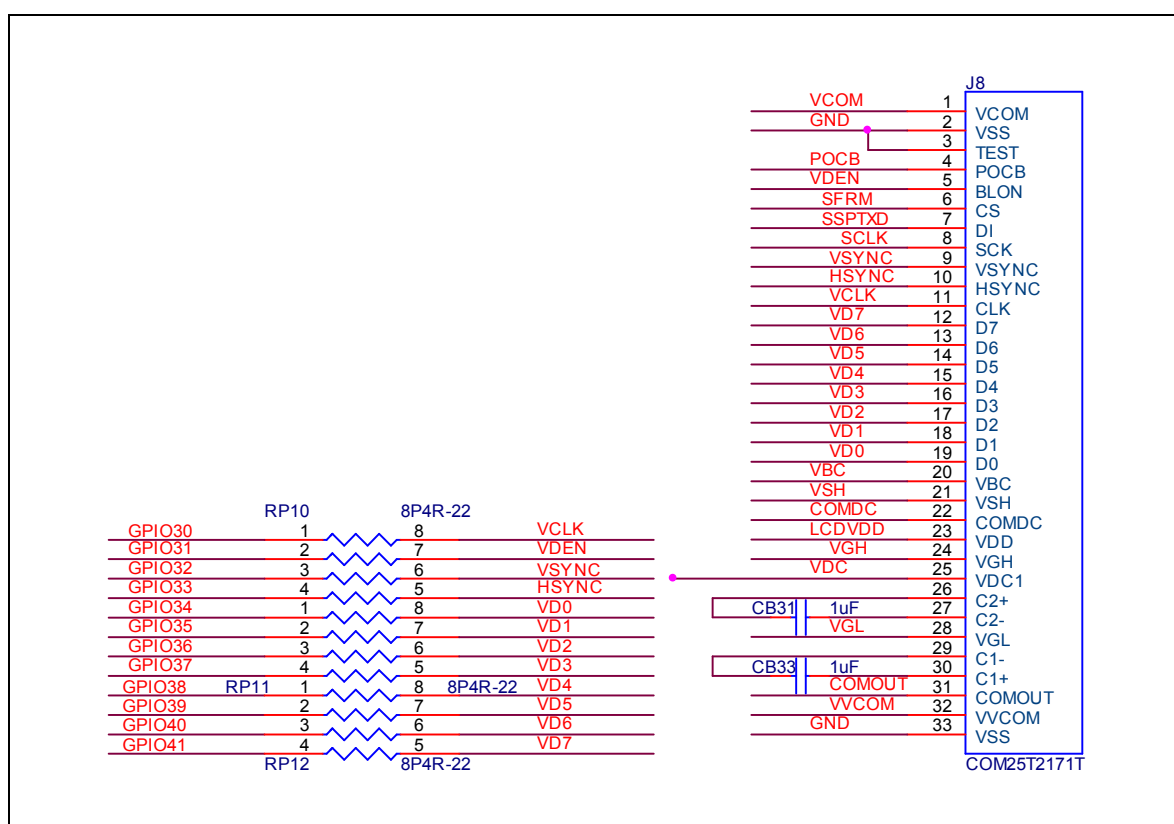
PS/2 PORT	IN/OUT SIGNALS	DESCRIPTION
PS/2 Keyboard only	DAT,CLK	CON11 (Mini-DIN-6)



- 20 -

### 3.6 LCD interface

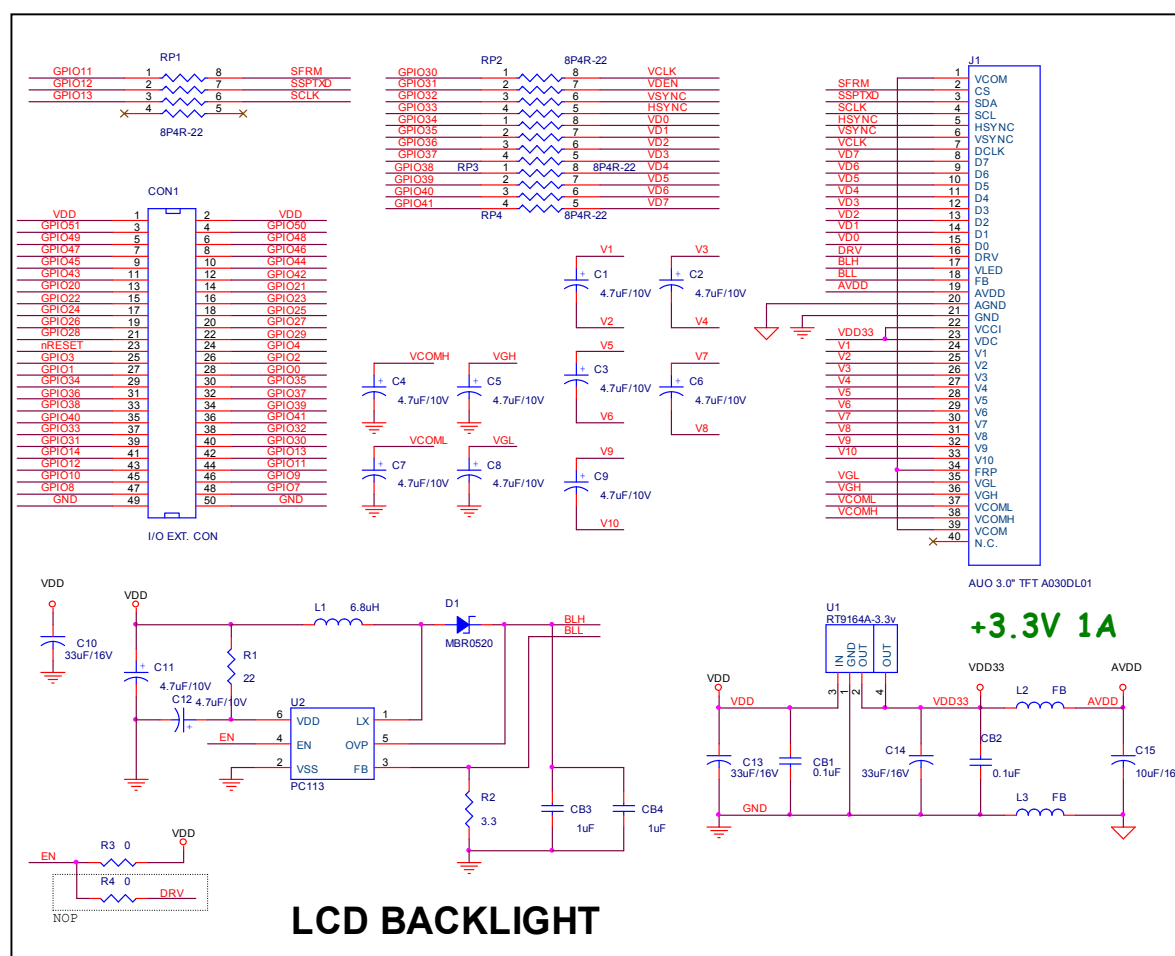
SUPPORTS TYPE	RESOLUTION	DATA WIDTH	DESCRIPTION
CASIO COM25T2171	480x240	8-bit	J8



## EVB USER MANUAL

### 3.6.2 AUO 3" TFT LCD module

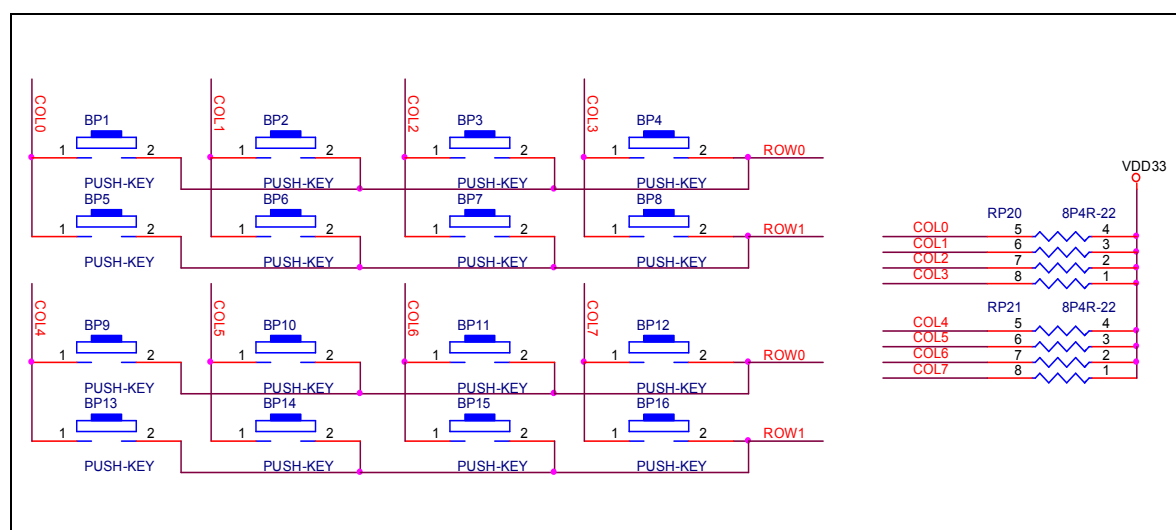
SUPPORTS TYPE	RESOLUTION	DATA WIDTH	DESCRIPTION
AUO A030DL01	960x240	RGB 8-bit	J1 of module board



## EVB USER MANUAL

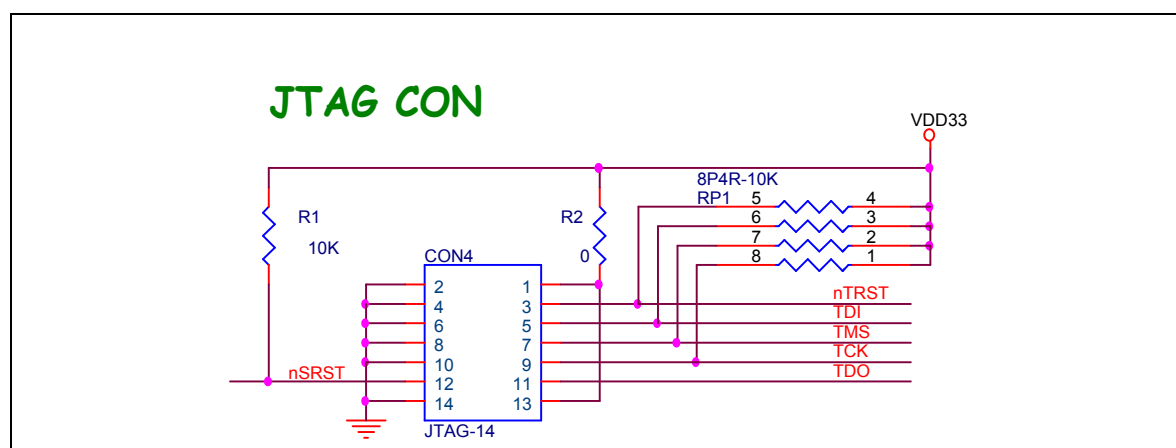
### 3.7 Keypad Interface

SUPPORTS TYPE	OUTPUT SIGNALS	INPUT SIGNALS	DESCRIPTION
2x8 Matrix	KPI_ROW[0-1]	KPI_COL[0-7]	BP1-BP16



### 3.8 JTAG Interface

SUPPORTS TYPE	IN/OUT SIGNALS	DESCRIPTION
JTAG Interface	TDO,TDI,TMS,TCK,nTRST,nSRST	CON4

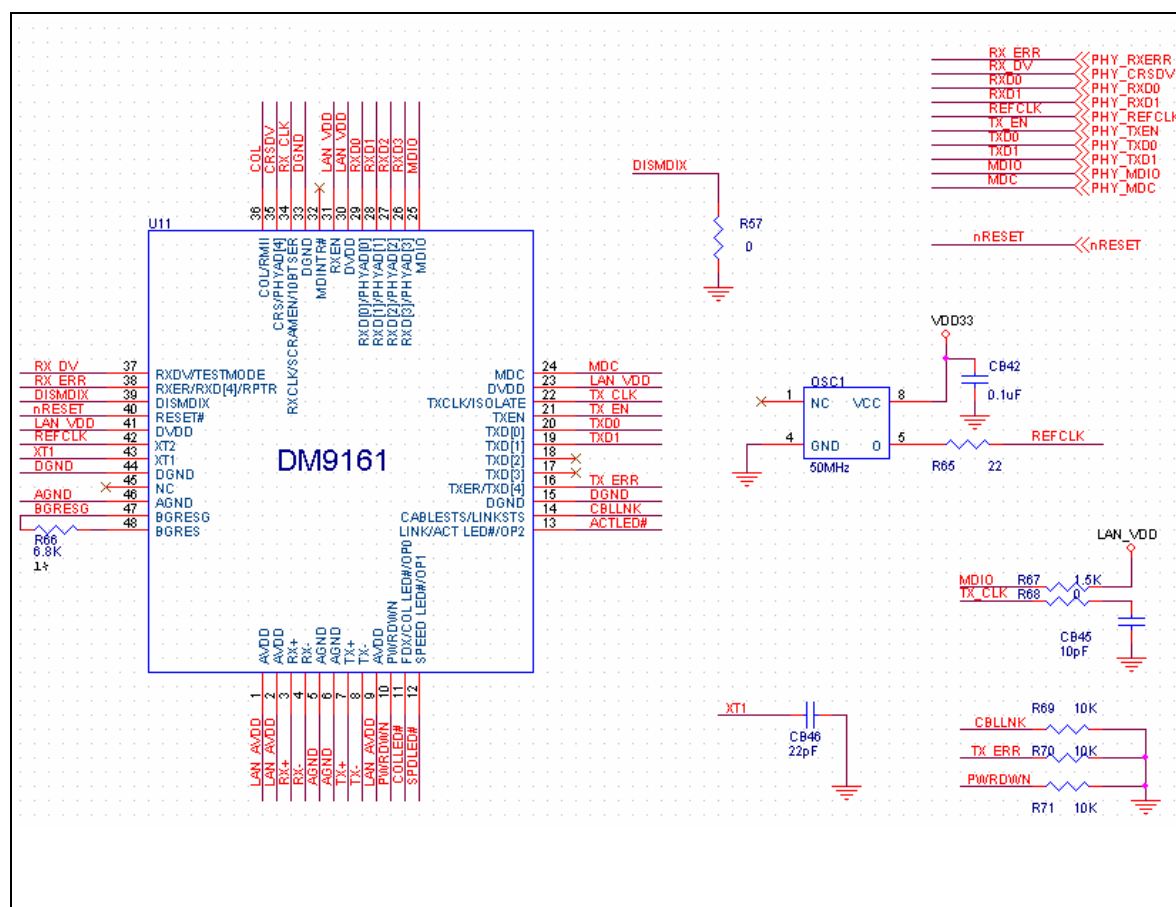




## EVB USER MANUAL

### 3.9 Ethernet

INTERFACE TYPE	IN/OUT SIGNALS	DESCRIPTION
RMII	RMII interface	Physical layer supported by DM9161A

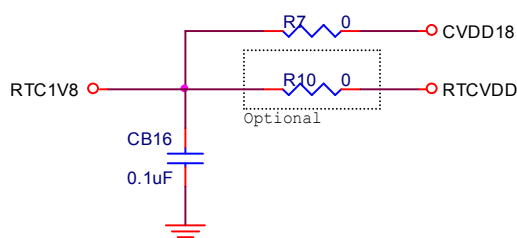


Please notice that NUC710 Ethernet MAC port can only supports RMII interface, don't supports MII interface PHYceiver.

### 3.10 RTC

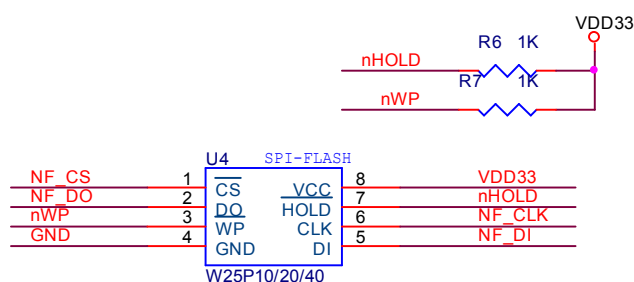
NUC710 integrated RTC function and it needed 1.8V voltage to supply the RTC internal circuit. The development board has two ways to supply the power for RTC, one from onboard 3.3V->1.8V LDO regulator RT9161 (mount R7) and the other way from external power source via RTCVDD pin (mount R10).

#### 1.8V VOLTAGE for RTC



### 3.11 SPI Interface

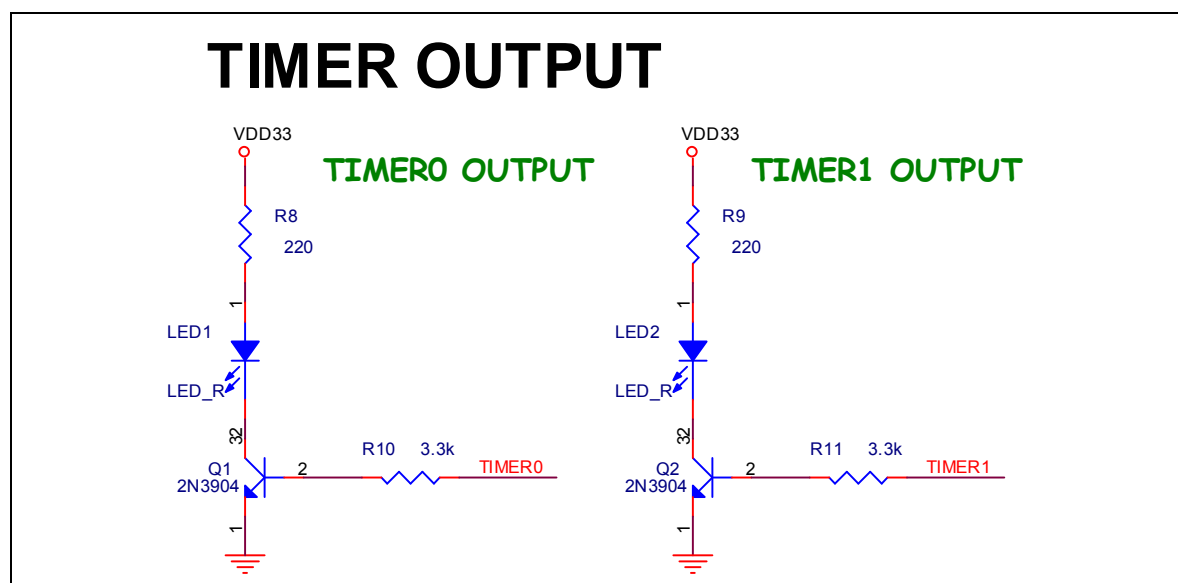
NUC710 integrated SPI interface and connected to a WINBOND serial flash in this application board. Please see the following schematic for more detail.



#### NexFLASH(SPI)

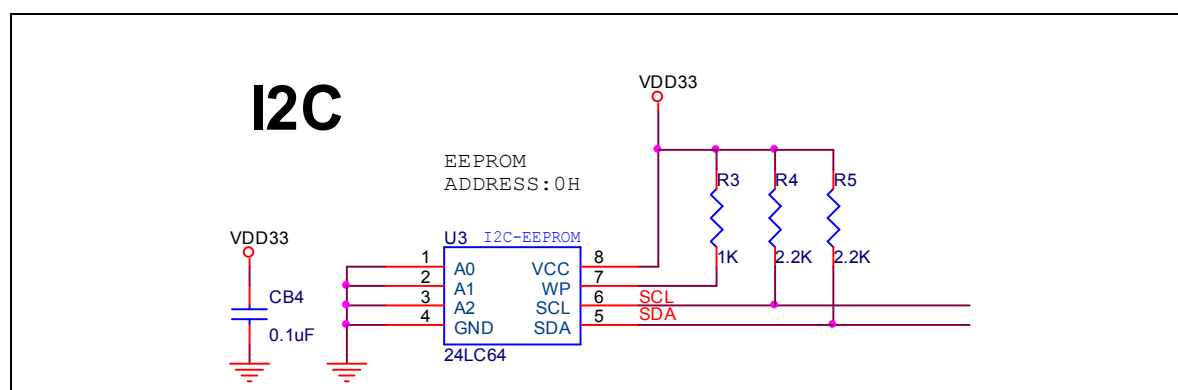
### 3.12 Timer output

NUC710 integrated timer output function and the development board connected two timer-out signals to LED display. Please see the following schematic for more detail.



### 3.13 I2C

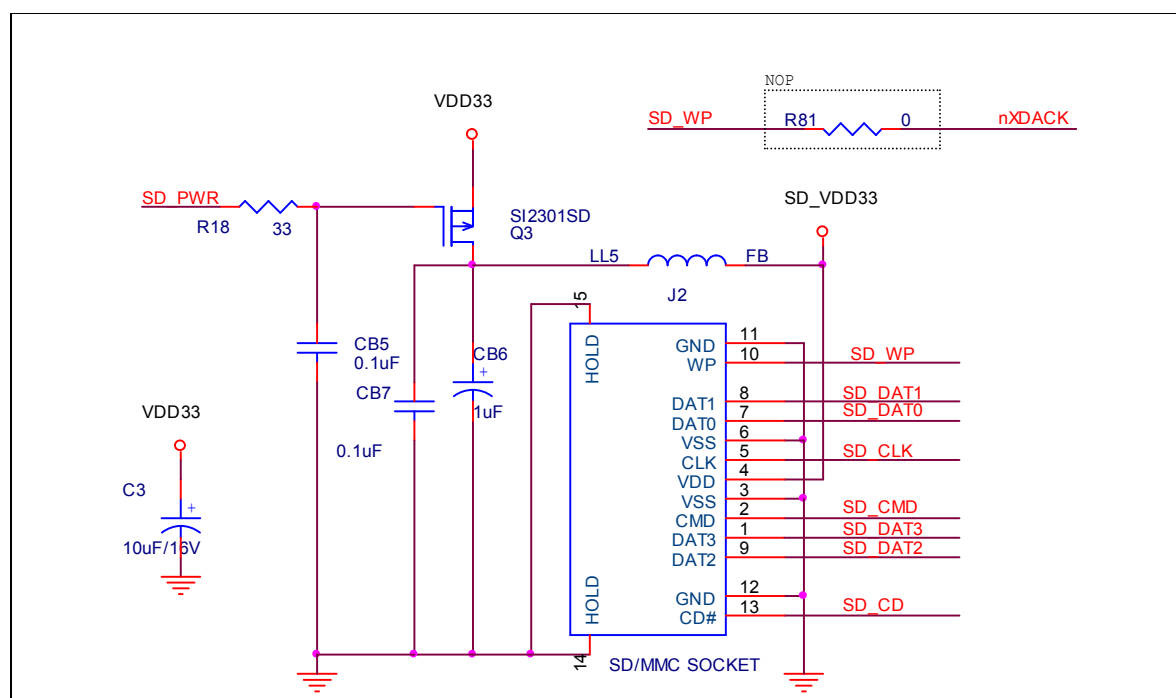
NUC710 integrated I2C interface and connected the SCL and SDA signals to a serial EEPROM which addressed at 0x0H. Please see the following schematic for more detail.



## EVB USER MANUAL

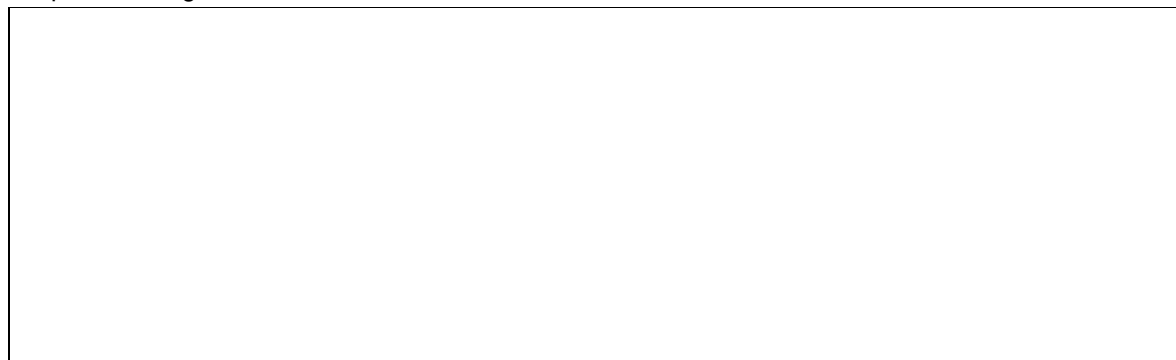
### 3.14 SD card interface

NUC710 integrated SD memory card interface and connected to a SD card slot in this application board. It used a power switch controlled by SD\_PWR signal to control the SD card power on/off. Please see the following schematic for more detail.

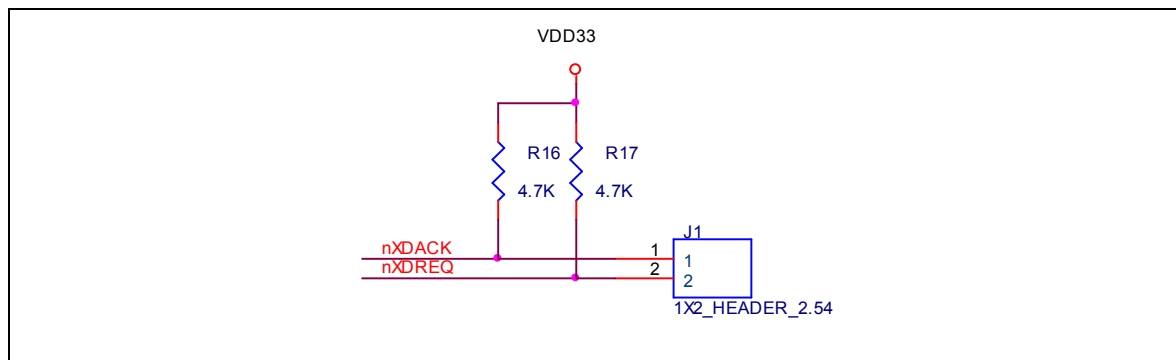


### 3.15 Ext. DMA interface

NUC710 supports external DMA request function for external device. The development board connected the nXDACK and nXDREQ signals to connector J1. Please connect the external DMA Request/Ack signal to the interface.



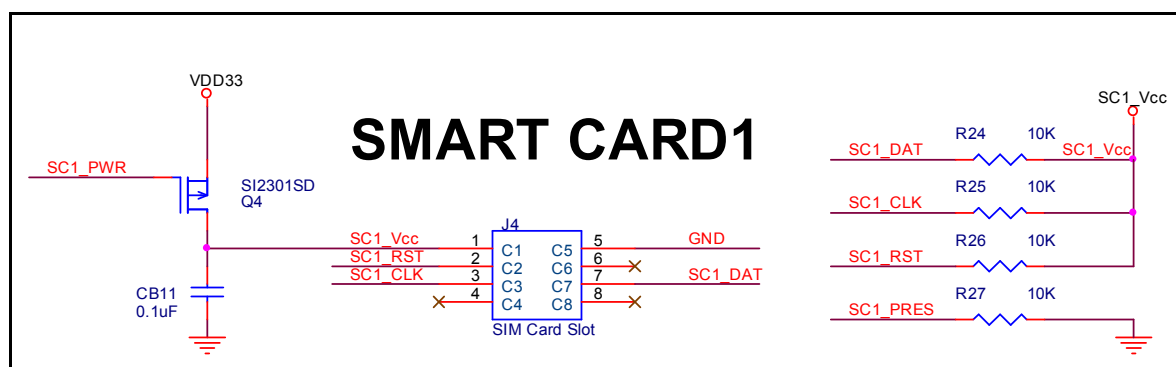
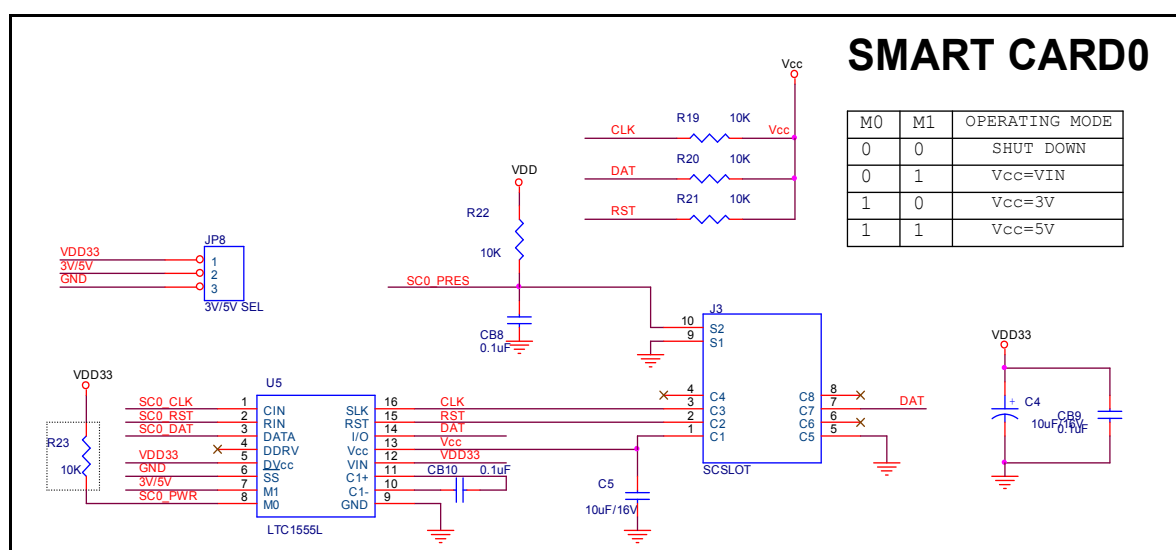
## EVB USER MANUAL



## EVB USER MANUAL

### 3.16 SMC interface

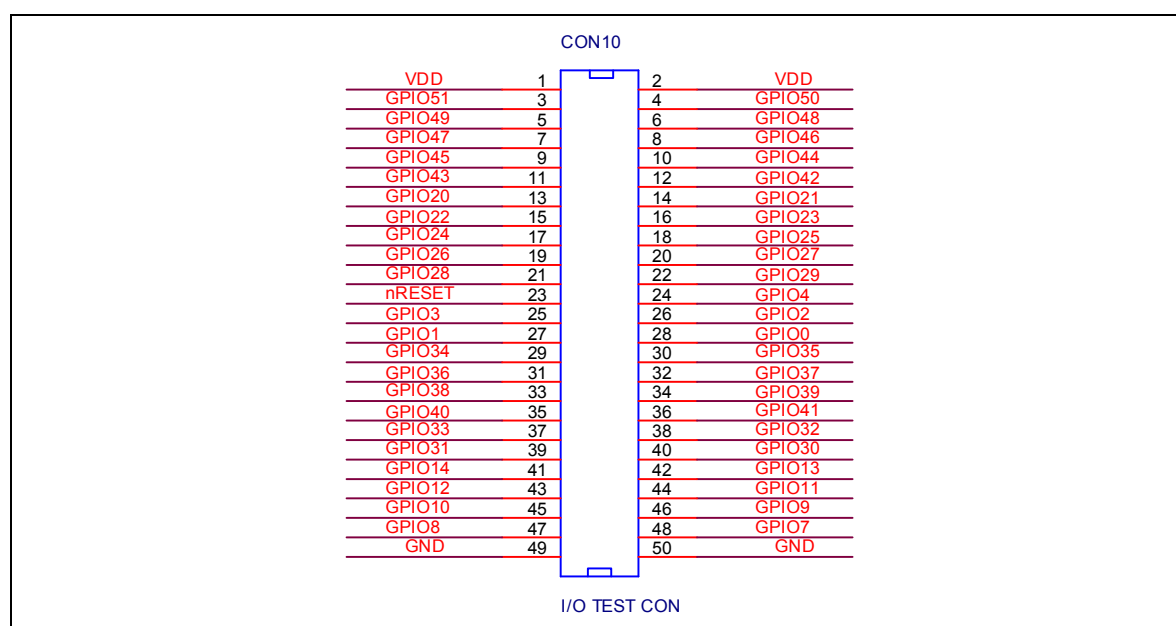
NUC710 integrated smart card controller and the application board connected the interface to a smart card slot and a SIM type socket. The smart card port0 connected with an external level-shifter to support 5V and 3V card. The smart card port1 interface connected to card directly but can only supports 3V SIM type smart card because the NUC710 I/O voltage is 3.3V level. Please refer to the following schematic for more detail.



## EVB USER MANUAL

### 3.17 GPIO TEST interface

The evaluation board reserved GPIO expansion interface for system development and testing. Please see the following connector pin arrangement for more detail.

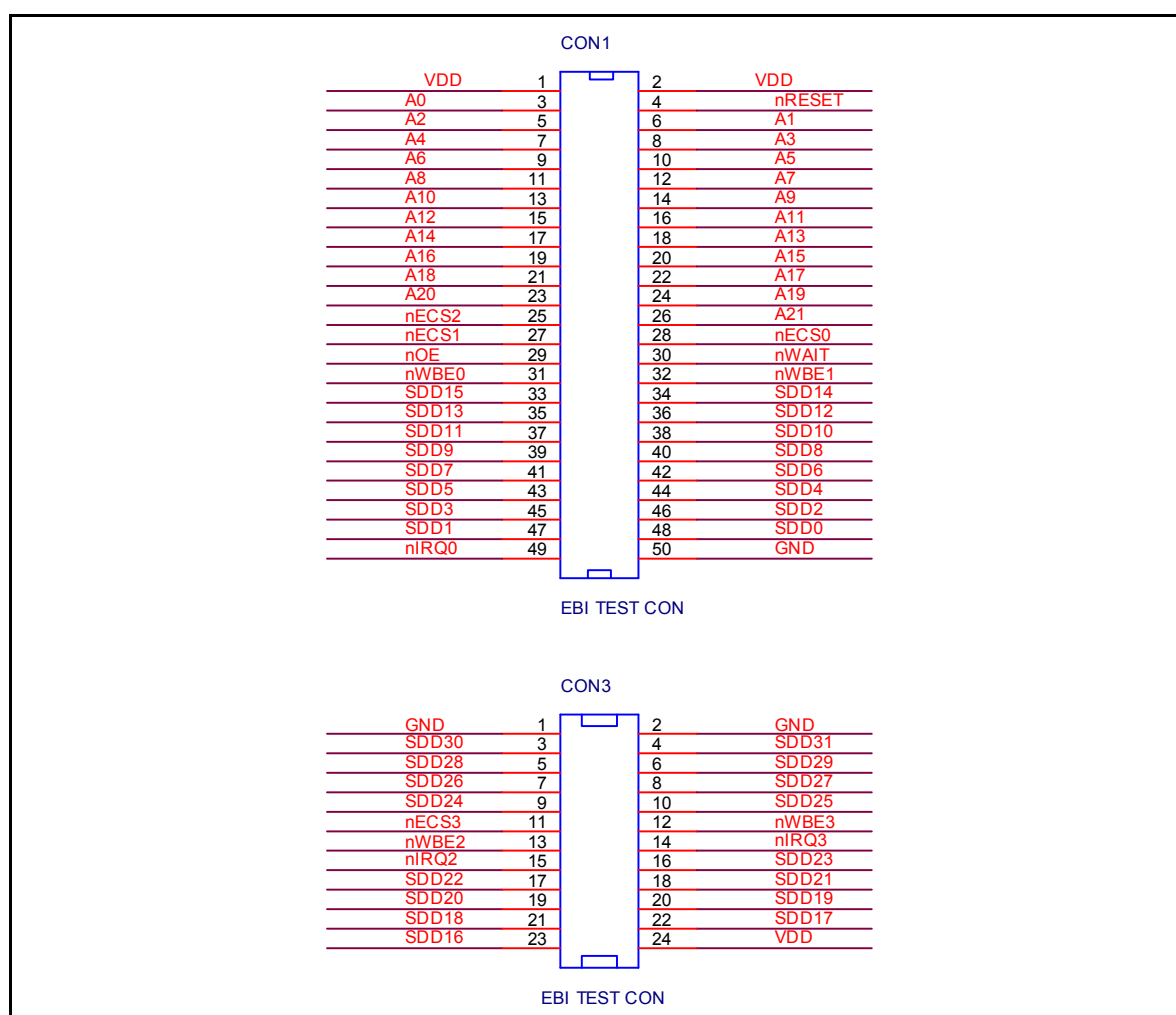




## EVB USER MANUAL

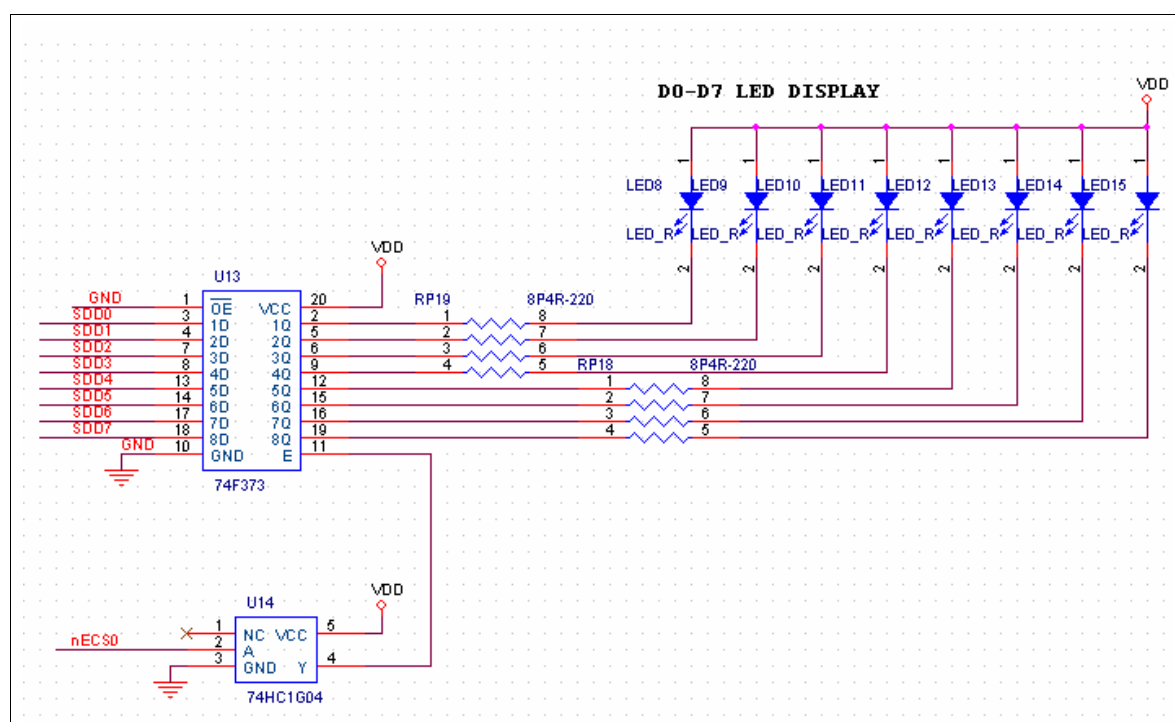
### 3.18 EBI interface

The evaluation board reserved EBI expansion interface for system expansion and testing. Please see the following connector pin arrangement for more detail.



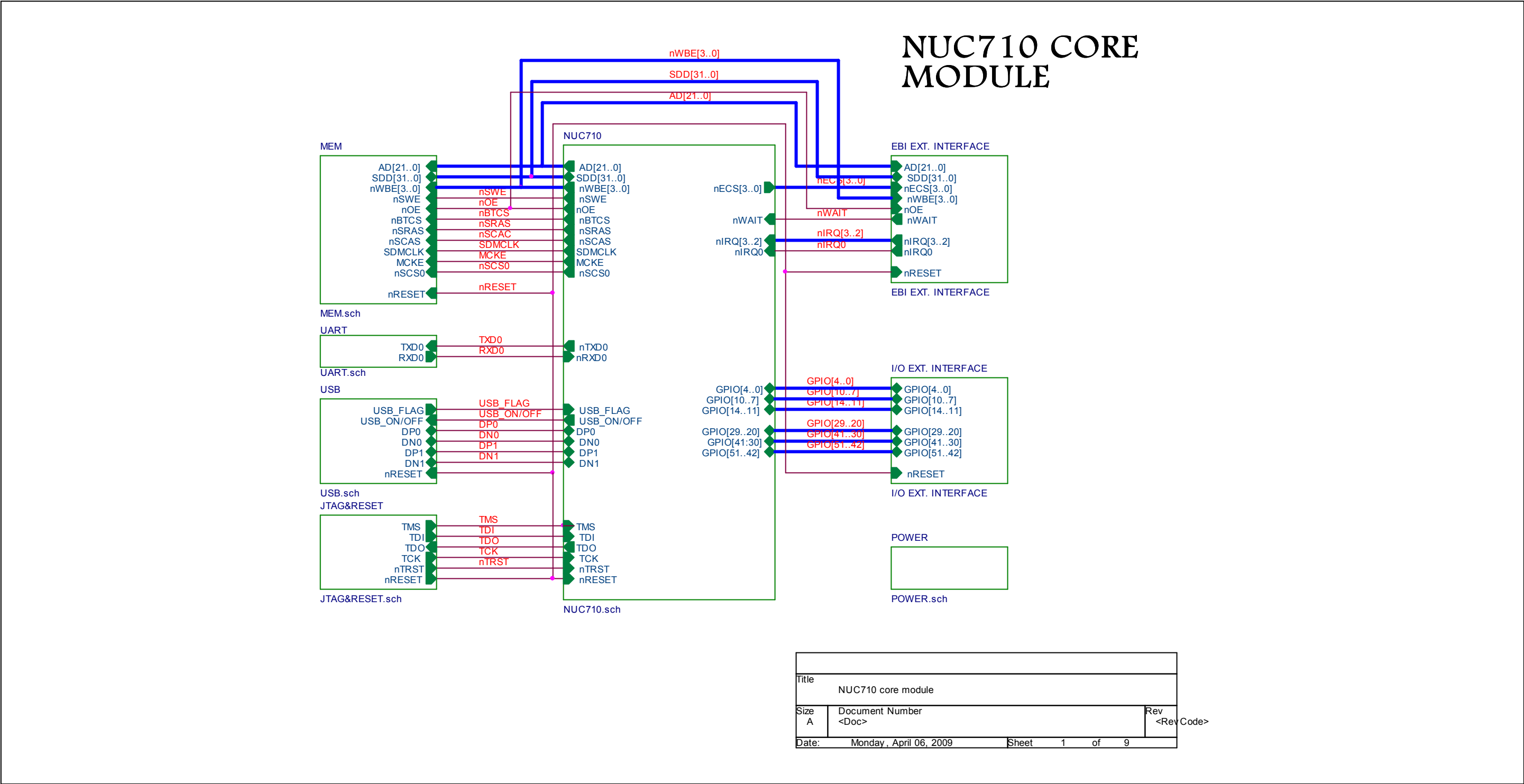
### 3.19 LED display

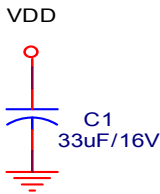
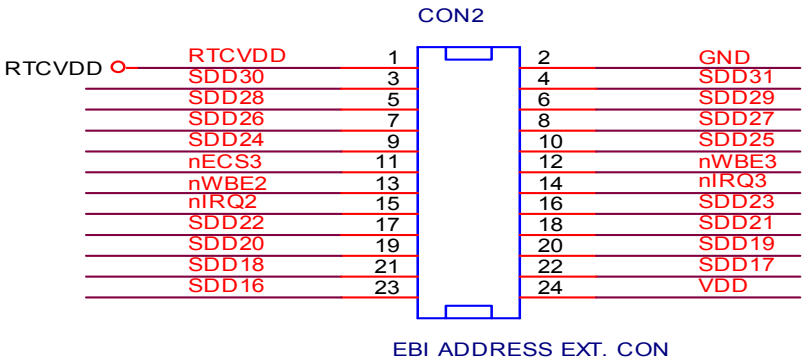
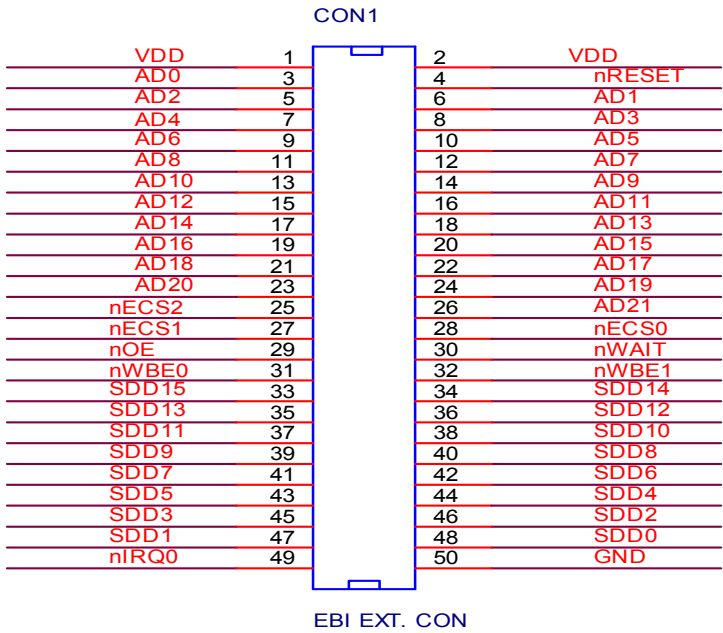
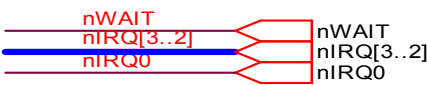
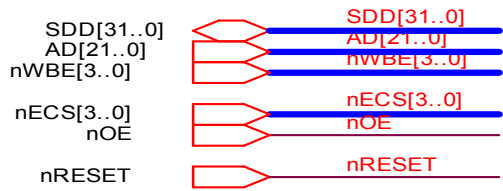
This board has 8-LED displays controlled by EBI bank0 with latch buffers for system development and testing. Please see the following schematic for more detail.



4. SCHEMATIC

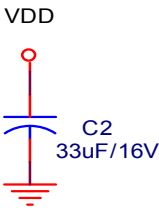
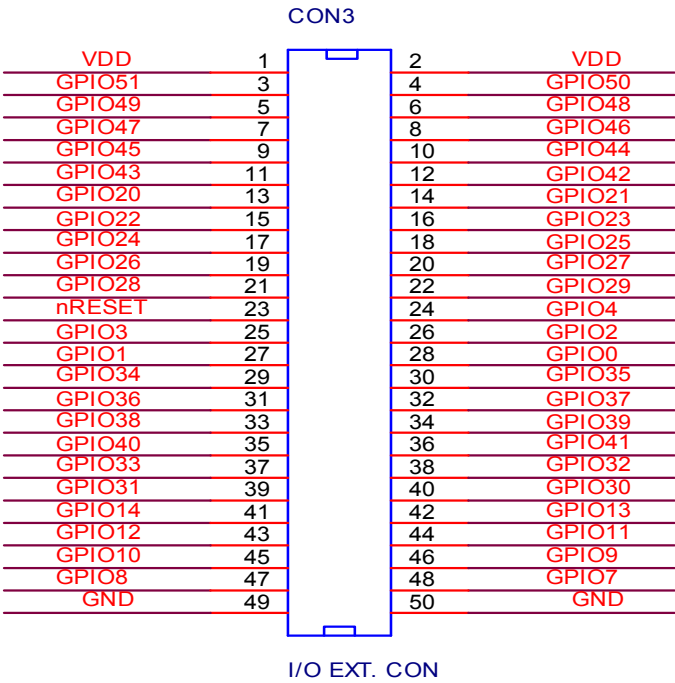
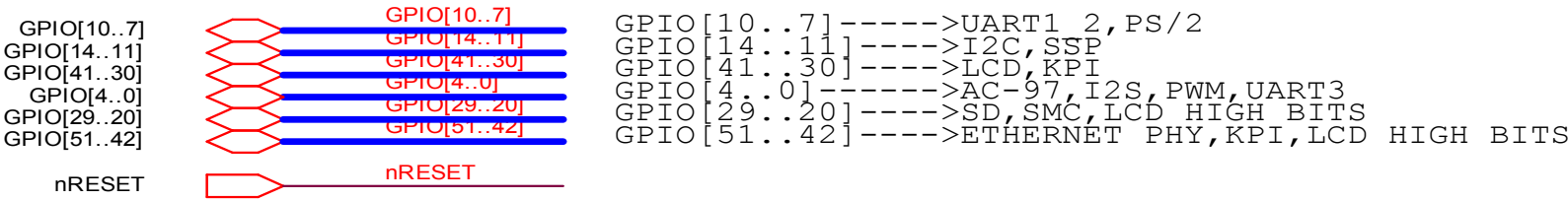
4.1 Core Module board



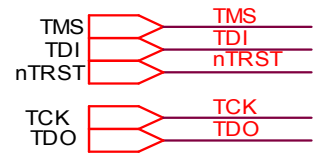


Title		
<Title>		
Size	Document Number	Rev
A	<Doc>	<Rev Code>
Date:	星期二, 十一月 08, 2005	Sheet 2 of 9

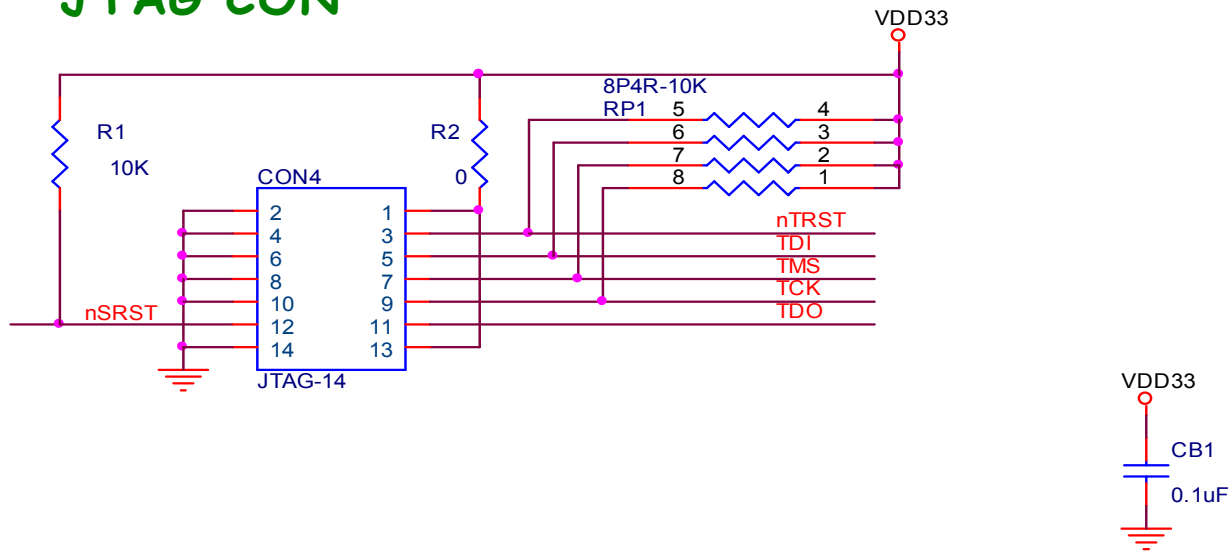
EVB USER MANUAL



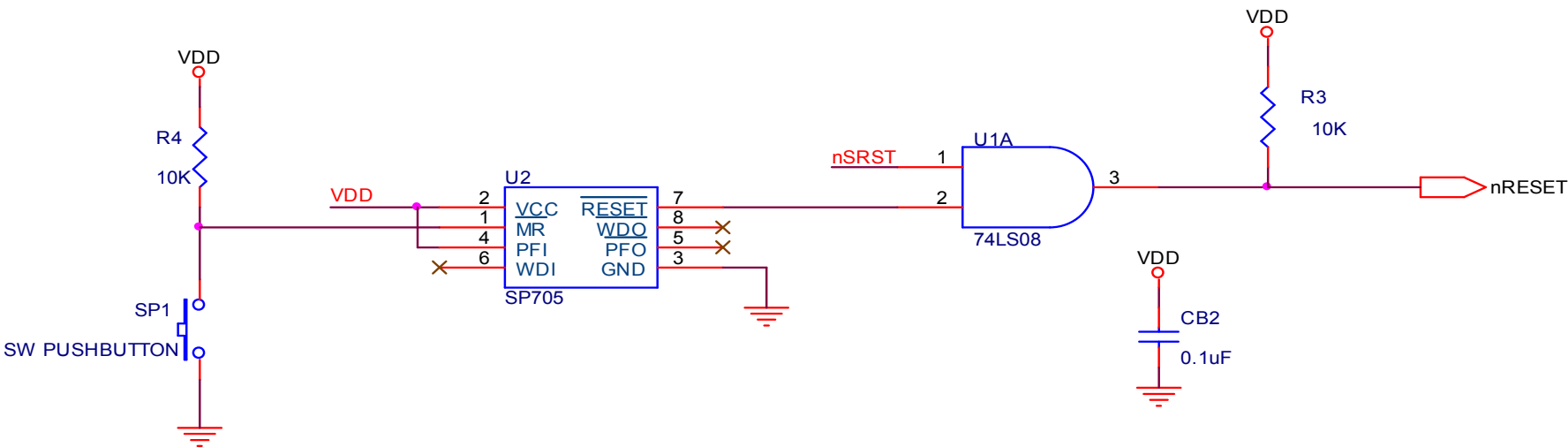
Title			
<Title>			
Size	Document Number		Rev
A	<Doc>		<Rev Code>
Date:	星期二, 十一月 08, 2005	Sheet	3 of 9



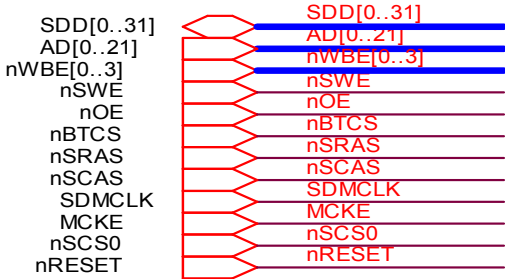
JTAG CON



RESET circuit

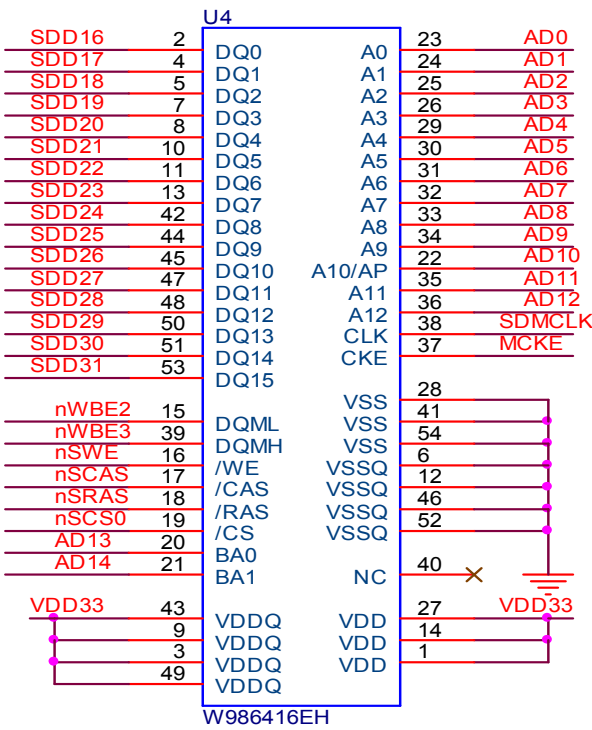
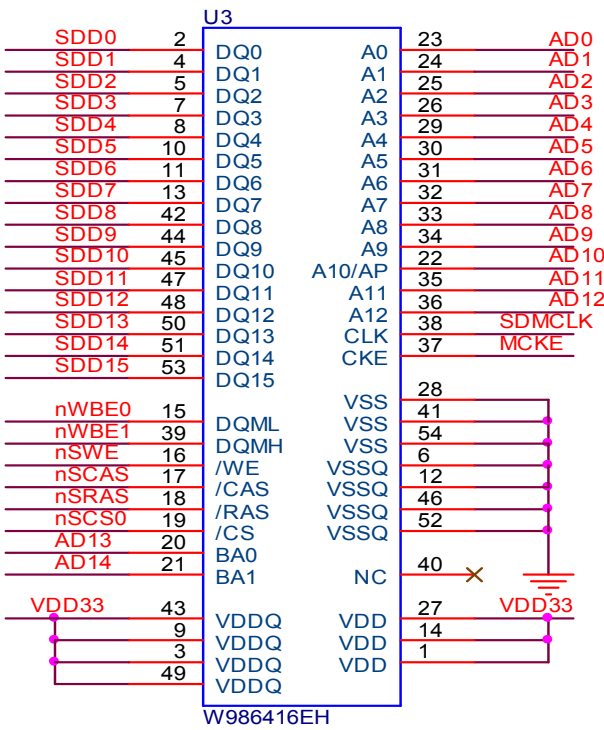


Title		
<Title>		
Size	Document Number	Rev
A	<Doc>	<Rev Code>
Date:	星期二, 十一月 08, 2005	Sheet 4 of 9



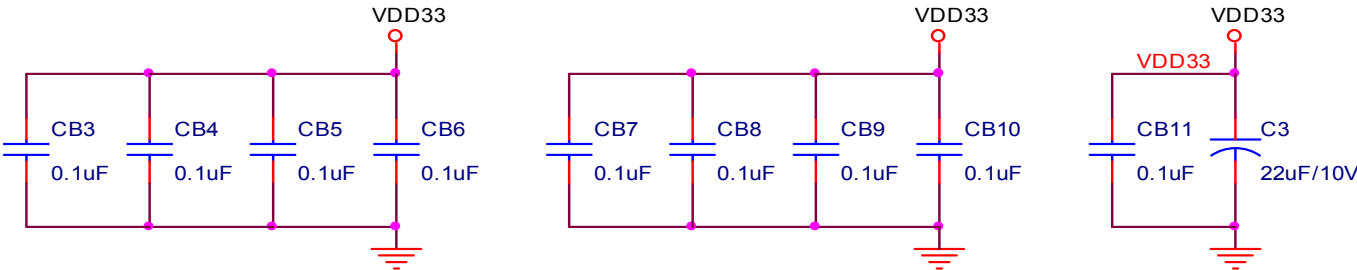
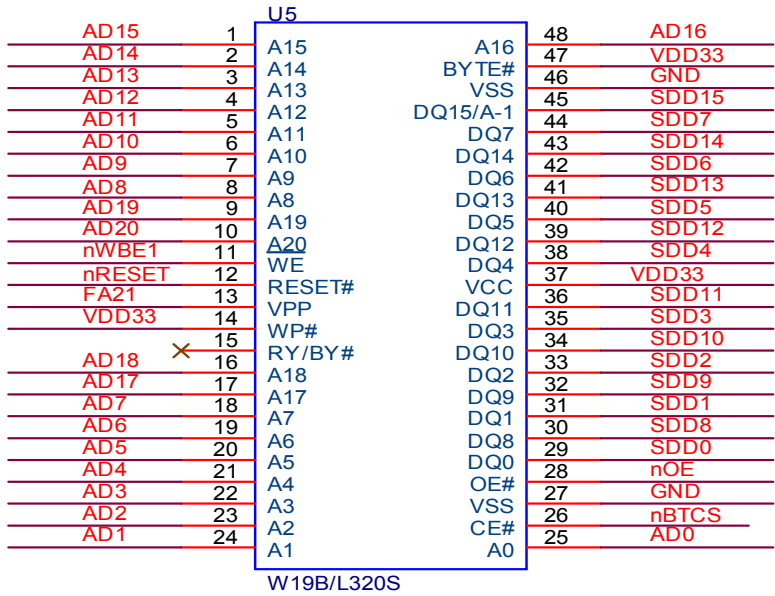
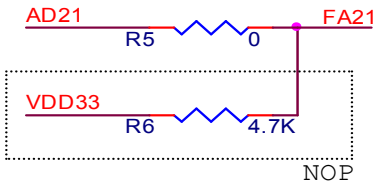
SDRAM

W986416AH 1M x16 x 4 BANKs  
W981216AH 2M x16 x 4 BANKs  
W982516AH 4M x16 x 4 BANKs



BOOT FLASH

FA21=VDD F for WINBOND FLASH  
FA21=A21 for AMD FLASH  
Default:AMD Flash



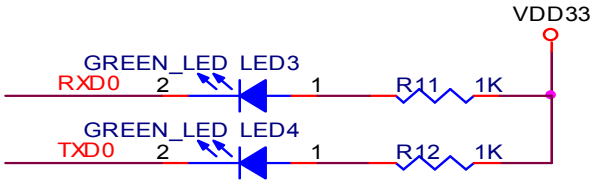
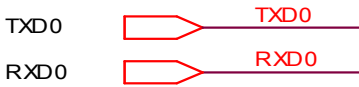
1,2,4MB(up to 8MB AMD FLASH)  
am29LV800B 512Kx16  
am29LV160D 1Mx16  
am29LV320D 2Mx16  
W19B/L320S 2Mx16

Title		
<Title>		
Size	Document Number	Rev
A	<Doc>	<Rev Code>
Date:	星期二, 十一月 08, 2005	Sheet 5 of 9

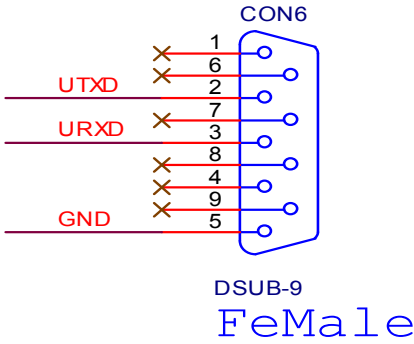
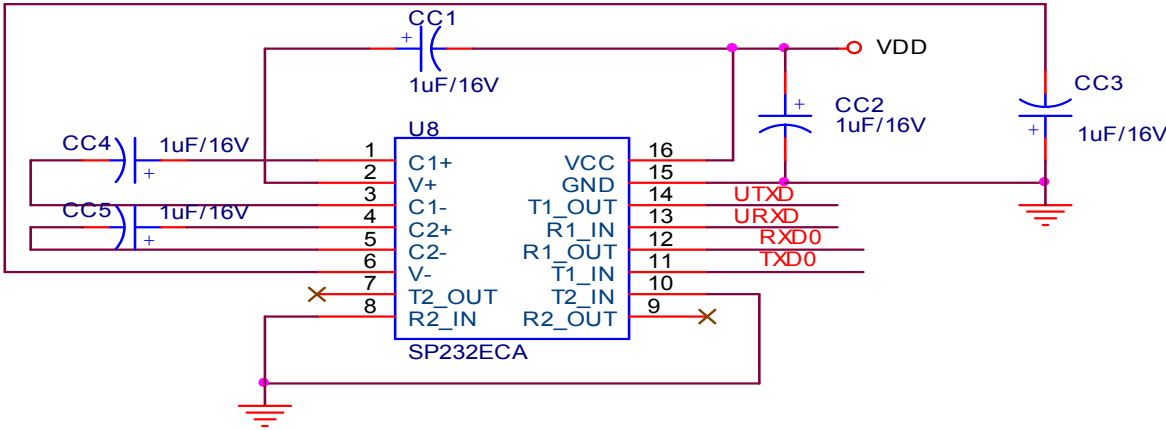


Title <Title>					
Size A	Document Number <Doc>				Rev <Rev Code>
Date:	星期二, 十一月 08, 2005		Sheet	6	of 9



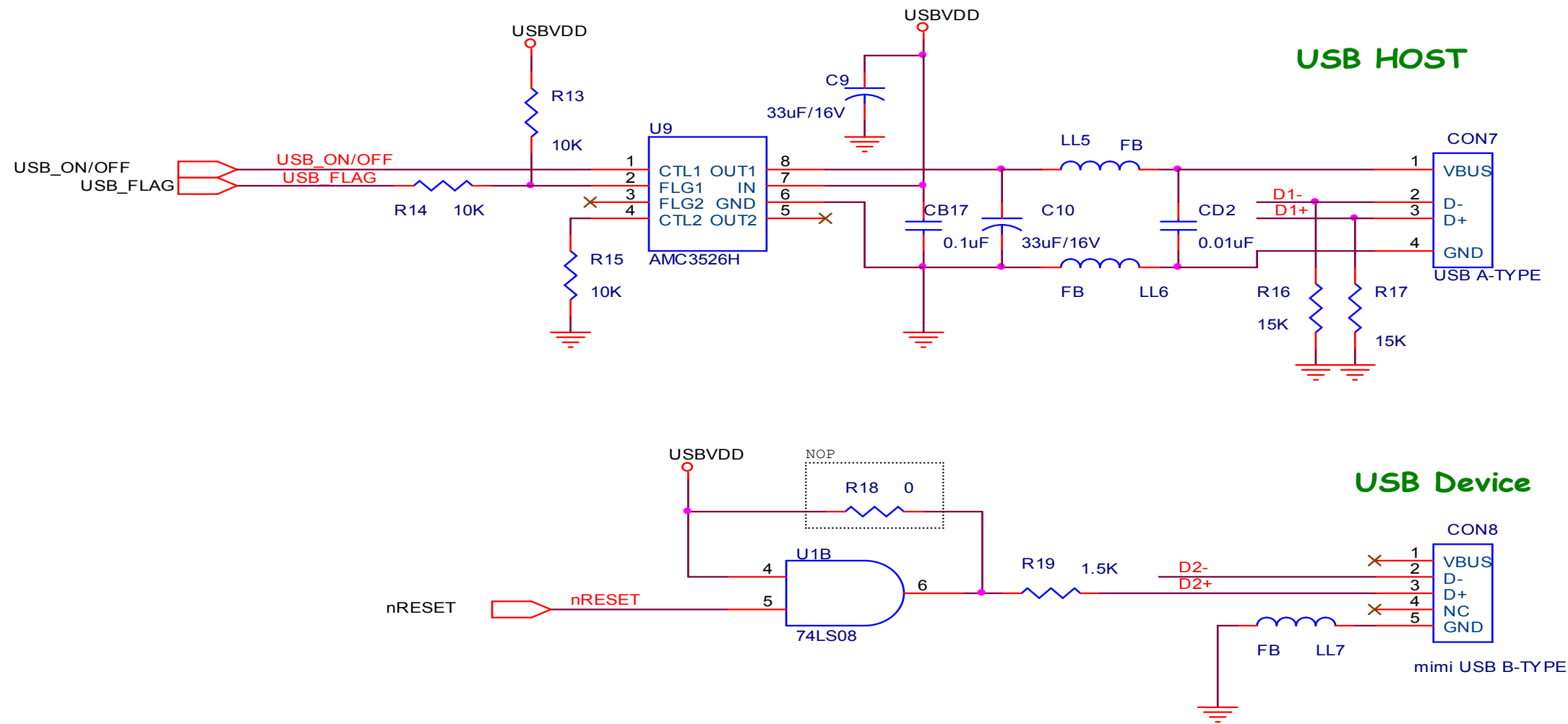
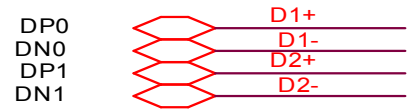


Console UART(TX/RX only)



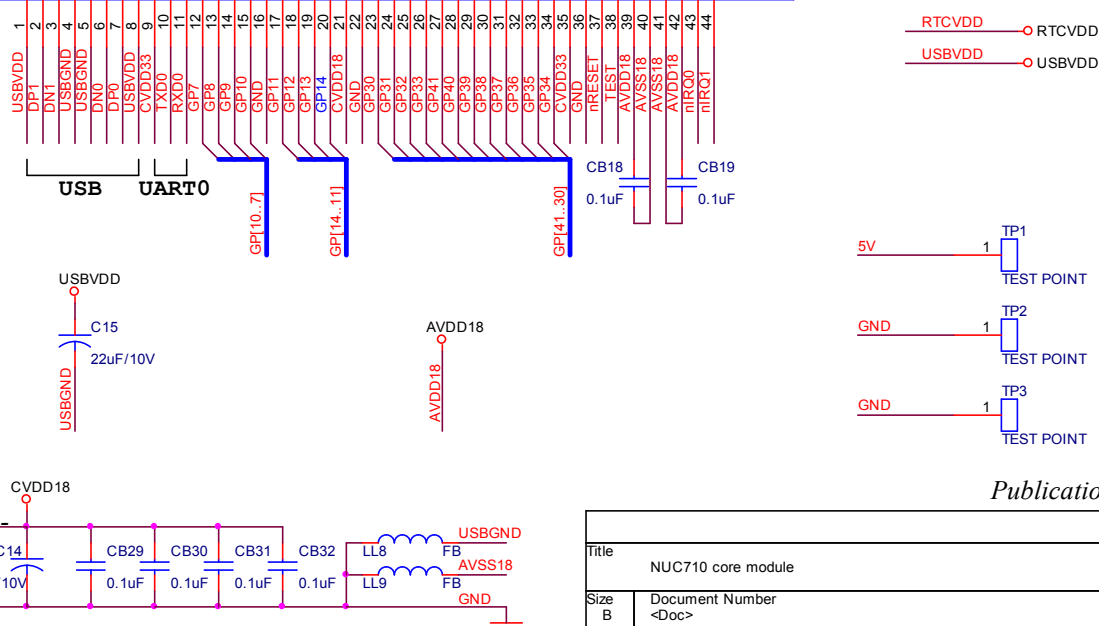
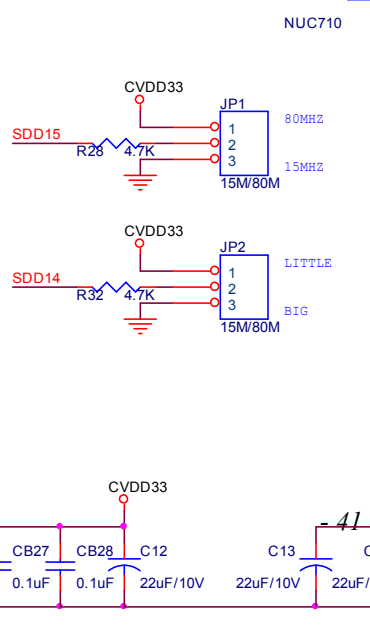
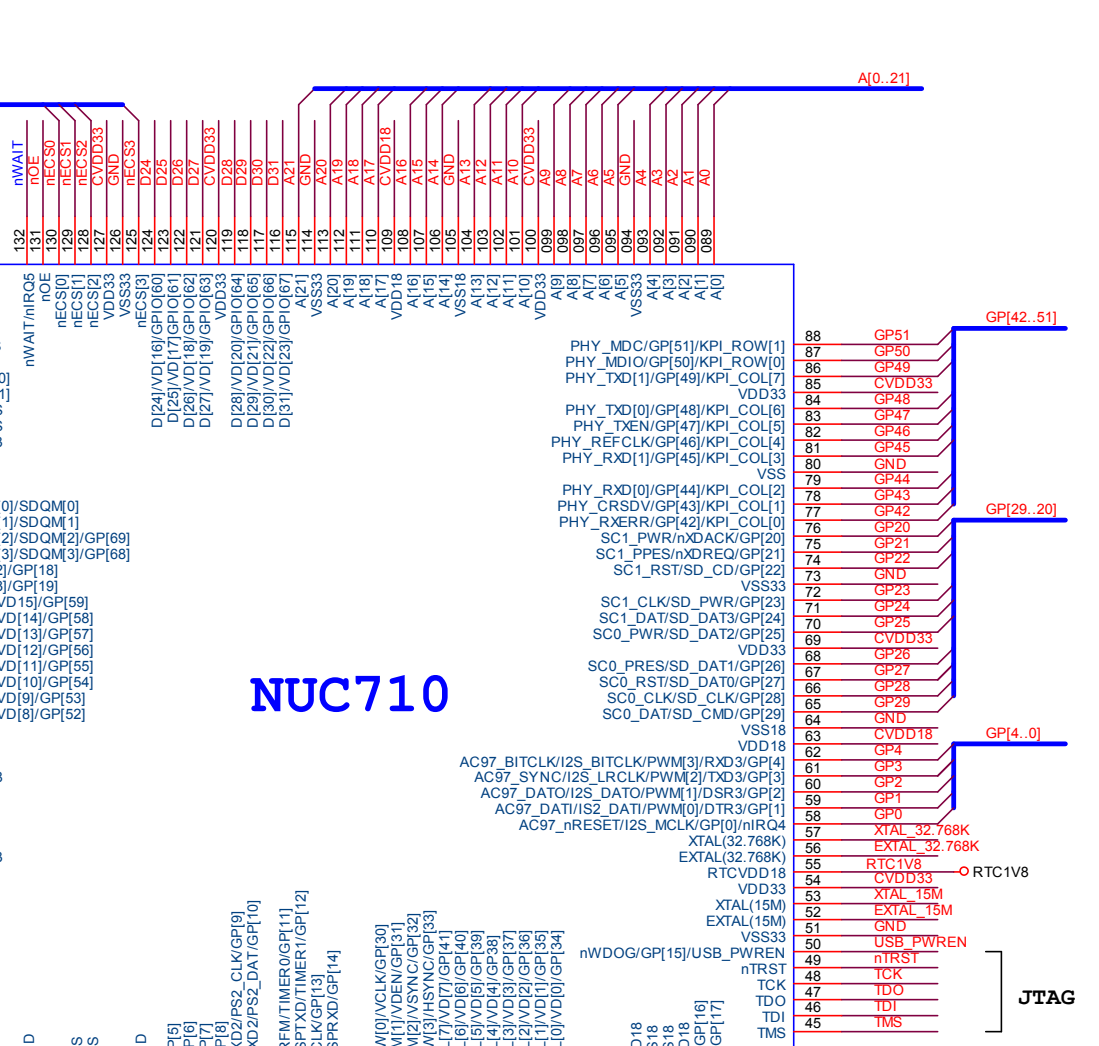
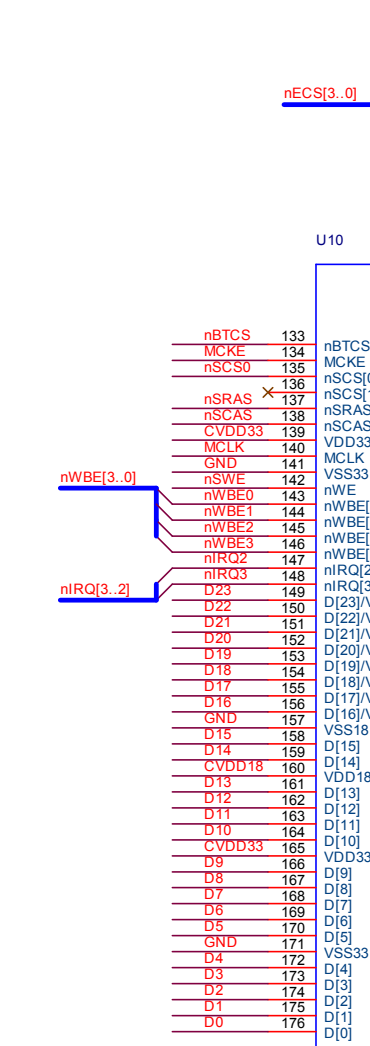
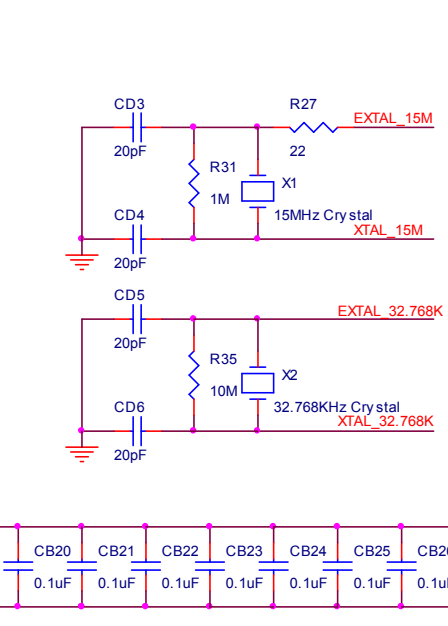
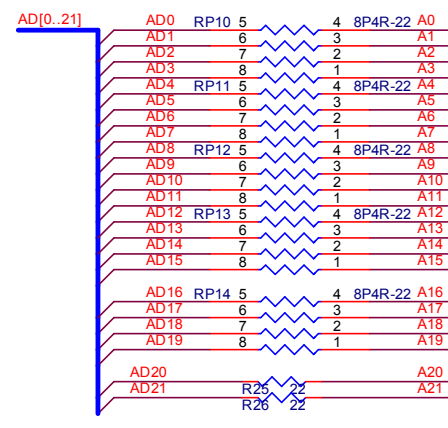
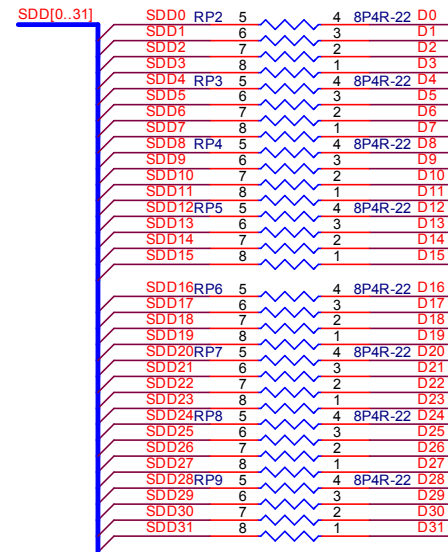
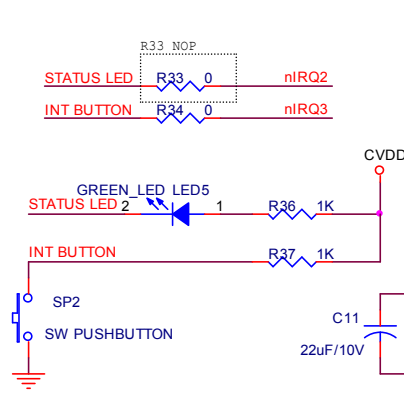
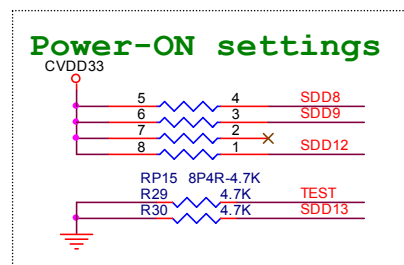
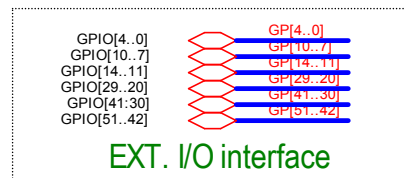
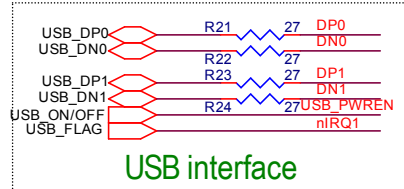
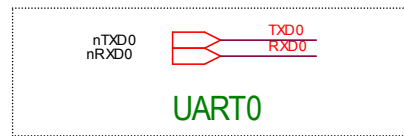
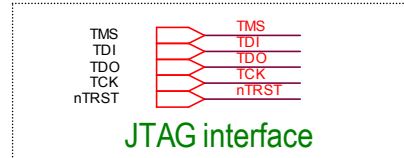
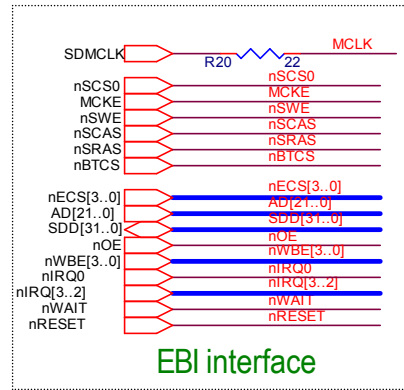
Female and Male are use difference pin define!!!

Title		
<Title>		
Size	Document Number	Rev
A	<Doc>	<Rev Code>
Date:	星期二, 十一月 08, 2005	Sheet 7 of 9



Title		
<Title>		
Size	Document Number	Rev
A	<Doc>	<Rev Code>
Date: 星期二, 十一月 08, 2005		
Sheet 8 of 9		

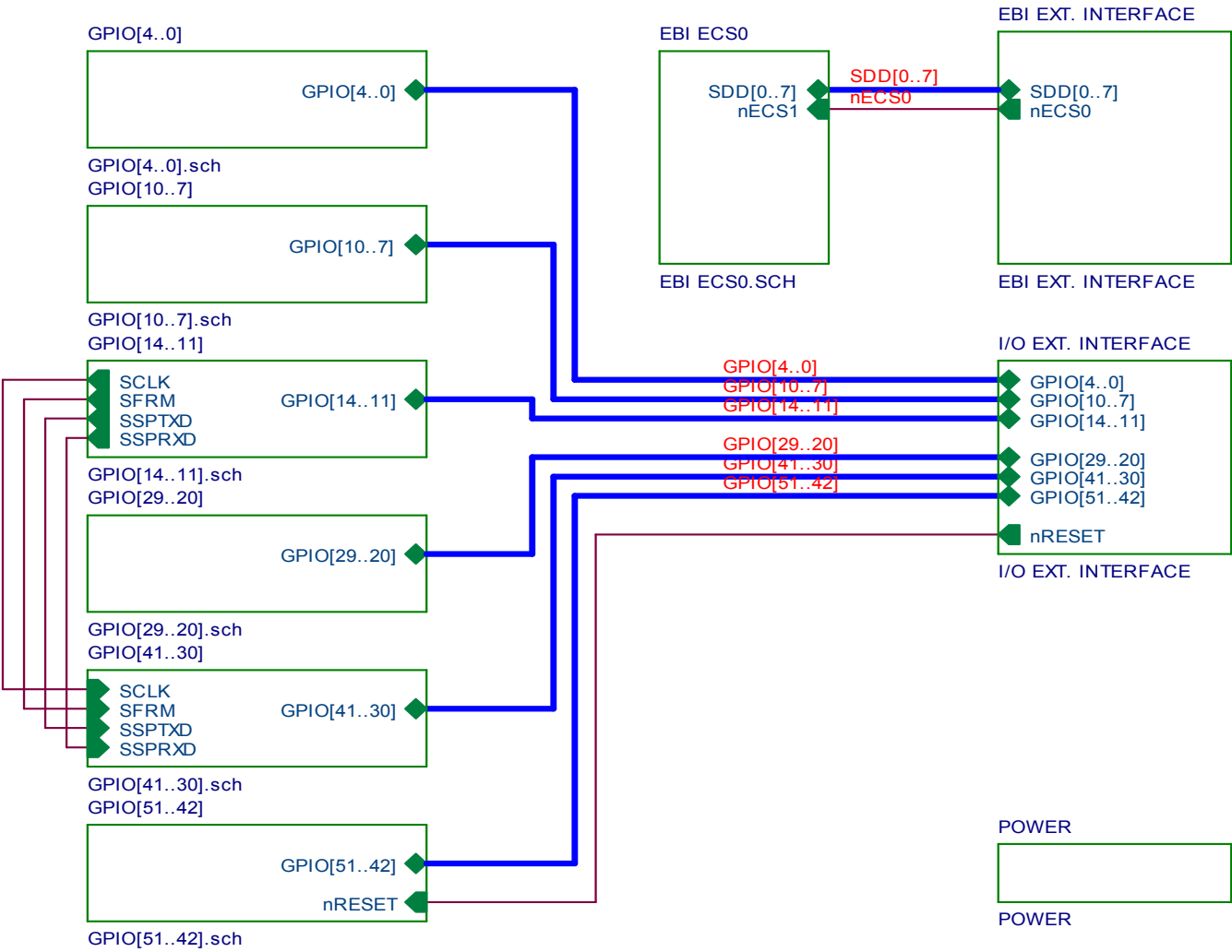
# EVB USER MANUAL



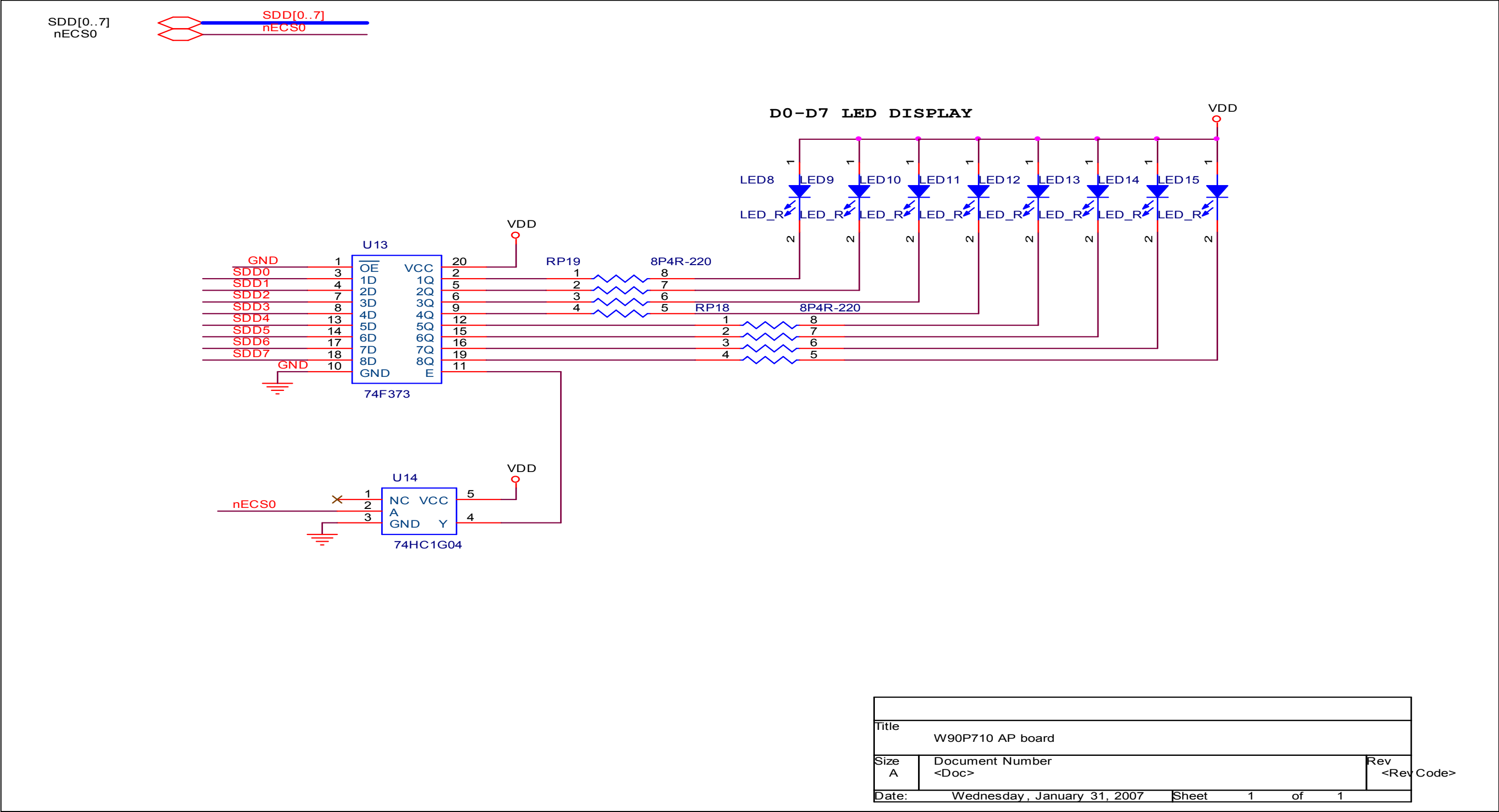
Title			NUC710 core module	
Size	Document Number	Rev	<Rev Code>	
B	<Doc>			
Date:	Monday, April 06, 2009	Sheet	9	of 9

4.2 Application board

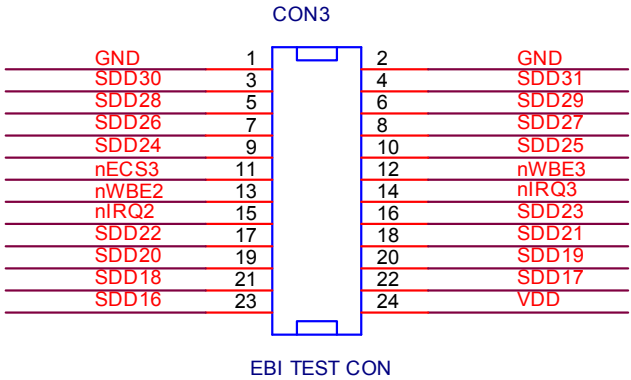
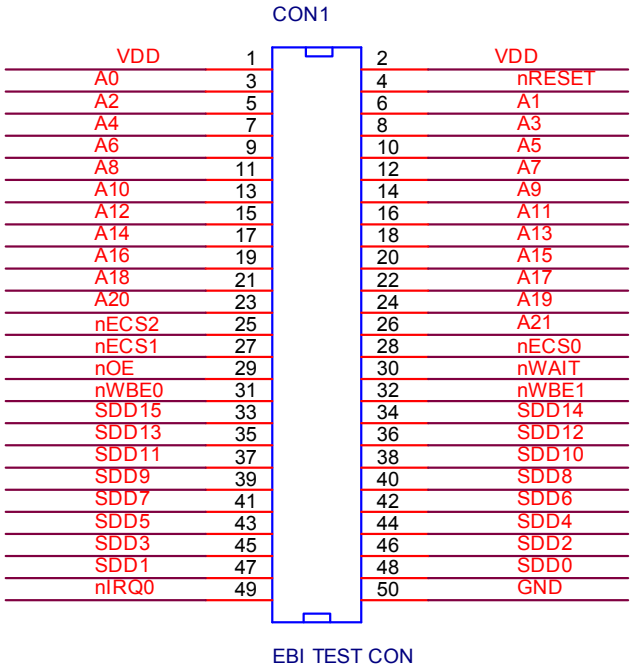
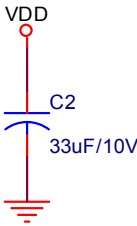
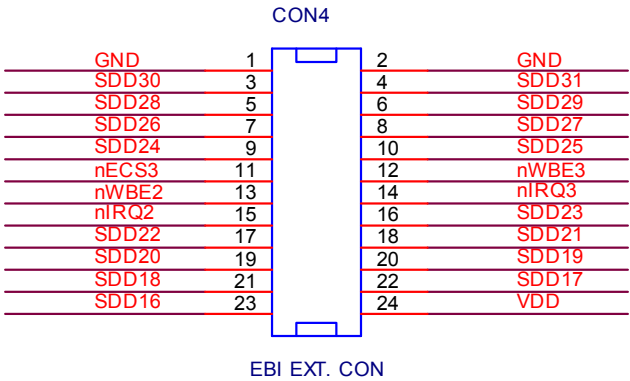
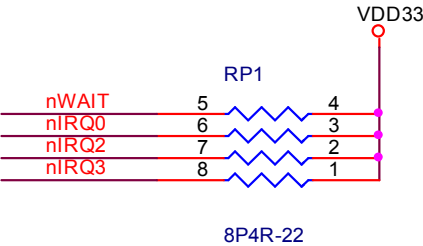
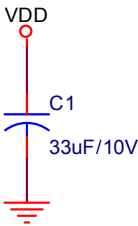
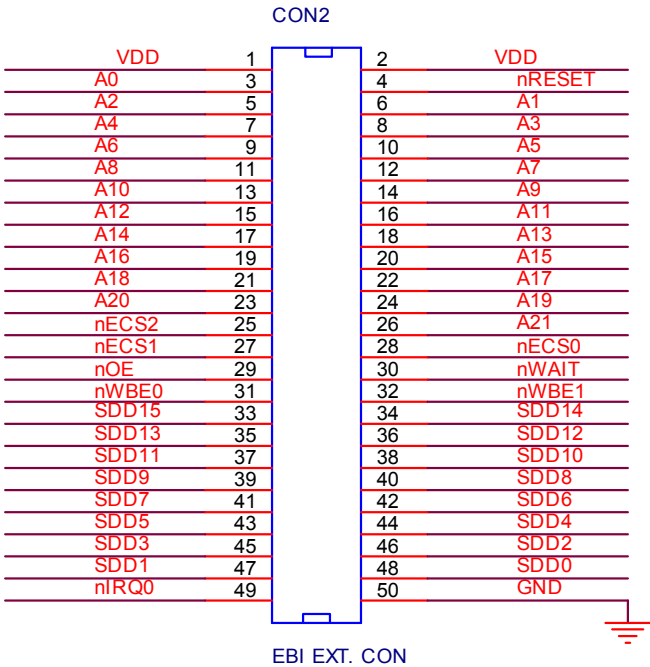
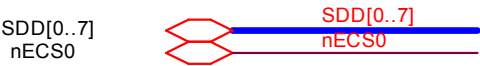
FUNCTION BLOCK



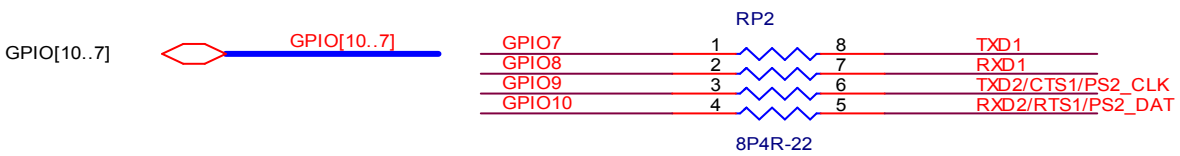
Title		
<Title>		
Size	Document Number	Rev
A	<Doc>	<Rev Code>
Date:	星期一, 一月 02, 2006	Sheet 1 of 13



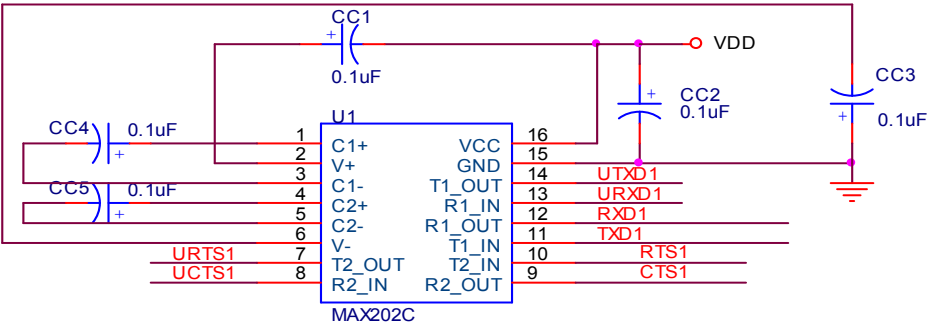
EBI EXT. CONNECTOR



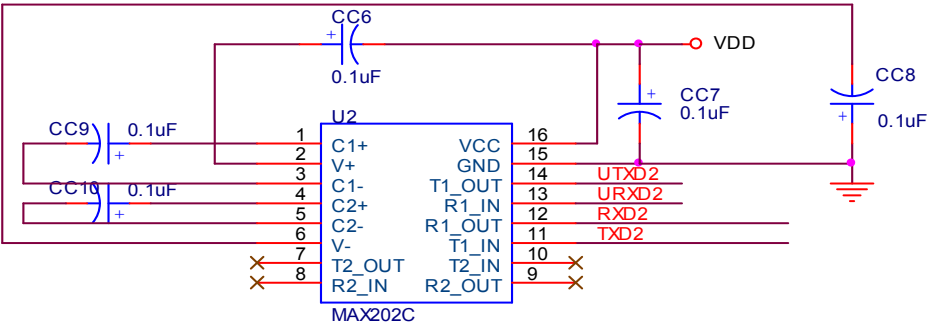
Title		
<Title>		
Size	Document Number	Rev
A	<Doc>	<Rev Code>
Date:	星期一, 一月 02, 2006	Sheet 2 of 13



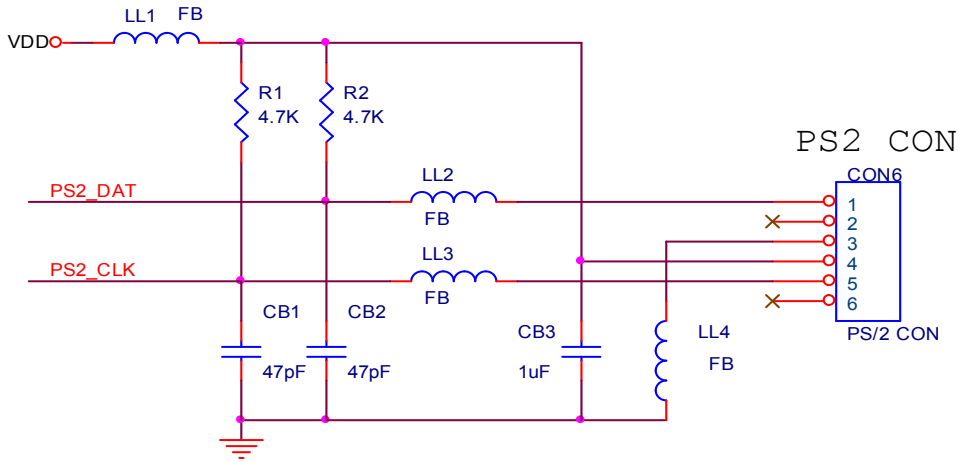
UART1



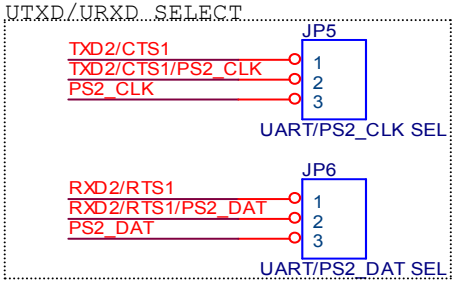
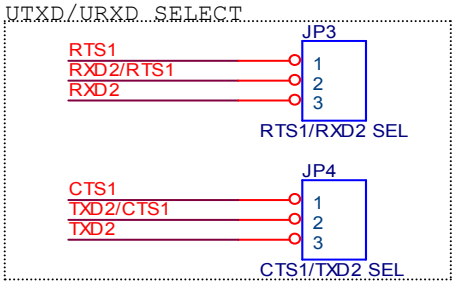
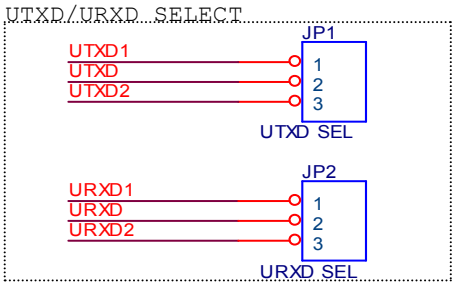
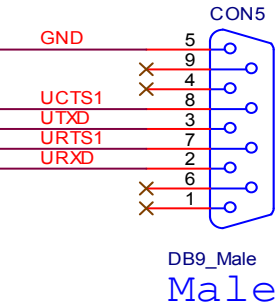
UART2



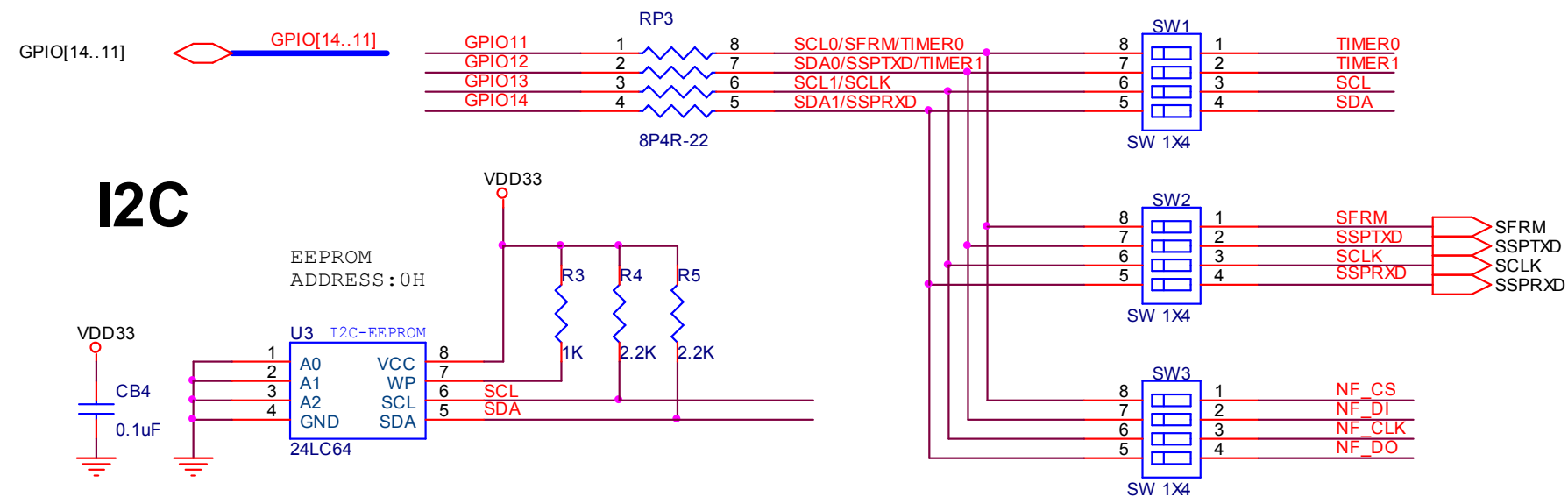
PS/2



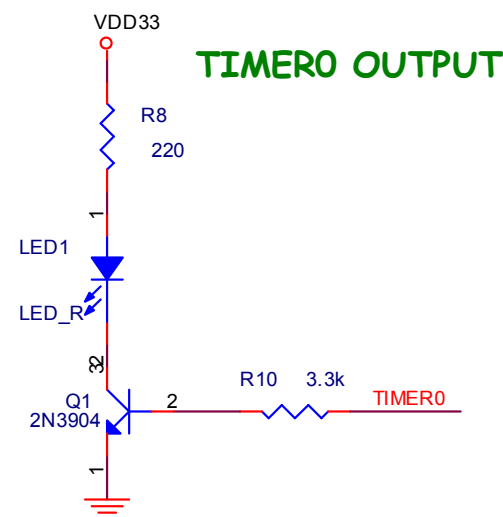
(UART1/2)



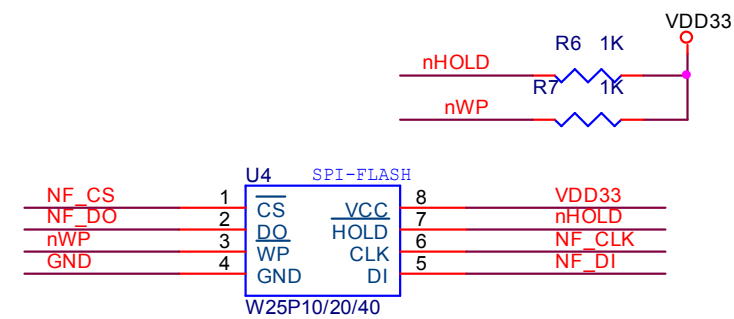
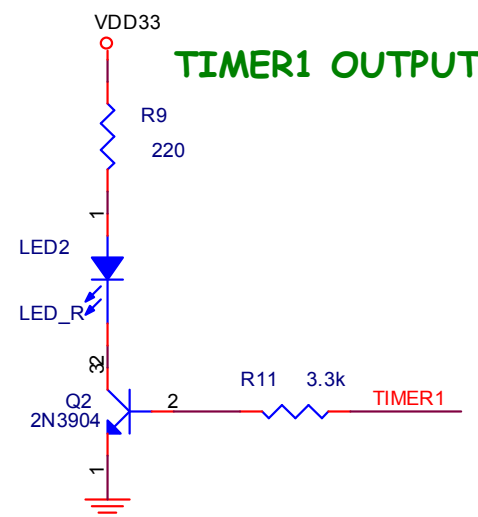
Title		
<Title>		
Size	Document Number	Rev
Custom	Doc	<Rev Code>
Date:	星期四, 十二月 22, 2005	Sheet 3 of 13



## TIMER OUTPUT



## TIMER1 OUTPUT



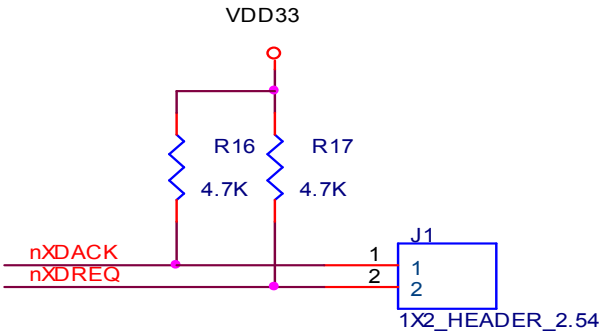
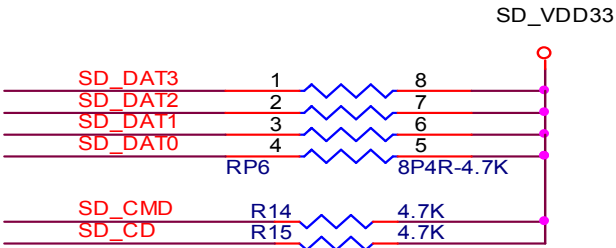
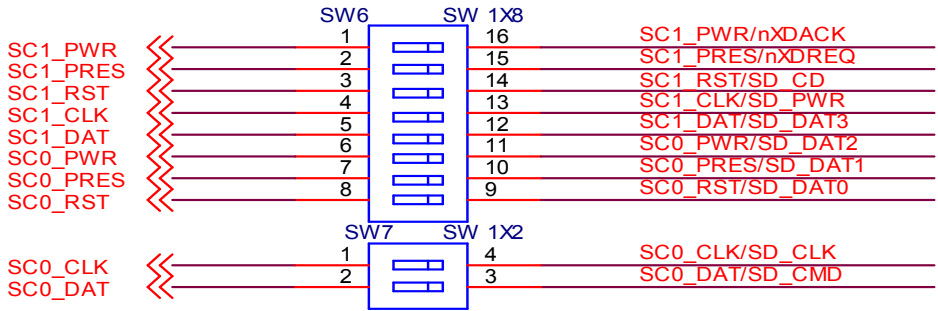
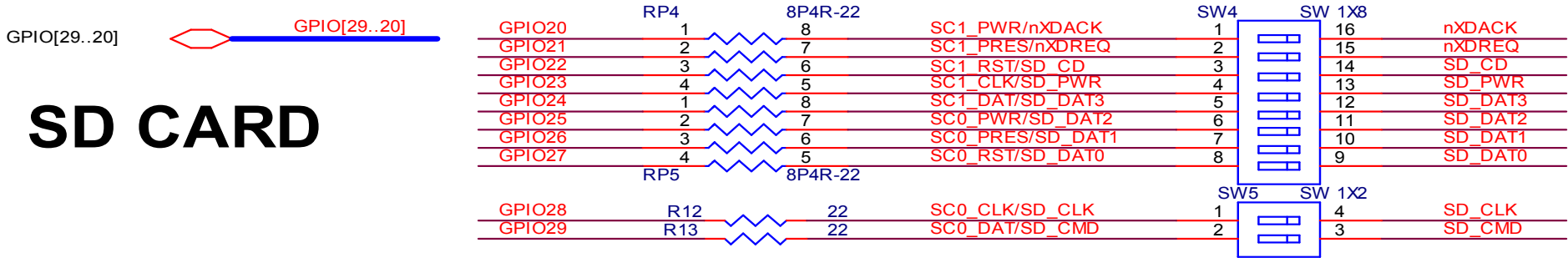
## NexFLASH(SPI)

	SW	
	ON	OFF
SCL1/SCLK	SCL (I2C)	SCLK (SSP)
SDA1/SSPRXD	SDA (I2C)	SSPRXD (SSP)
SCL0/SFRM/TIMER0	T0 OUTPUT	SFRM (SSP)
SDA0/SSPTXD/TIMER1	T1 OUTPUT	SSPTXD (SSP)

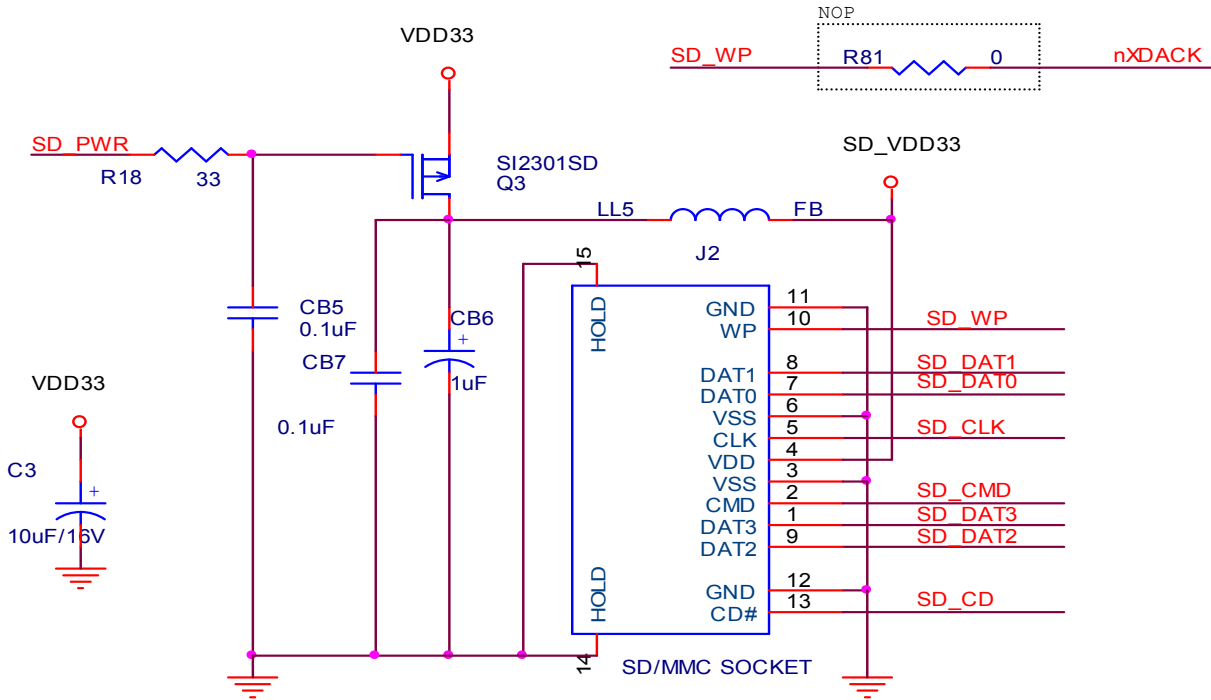
Title <Title>			
Size A	Document Number <Doc>		Rev <Rev Code>
Date:	星期四, 十二月 22, 2005	Sheet	4 of 13



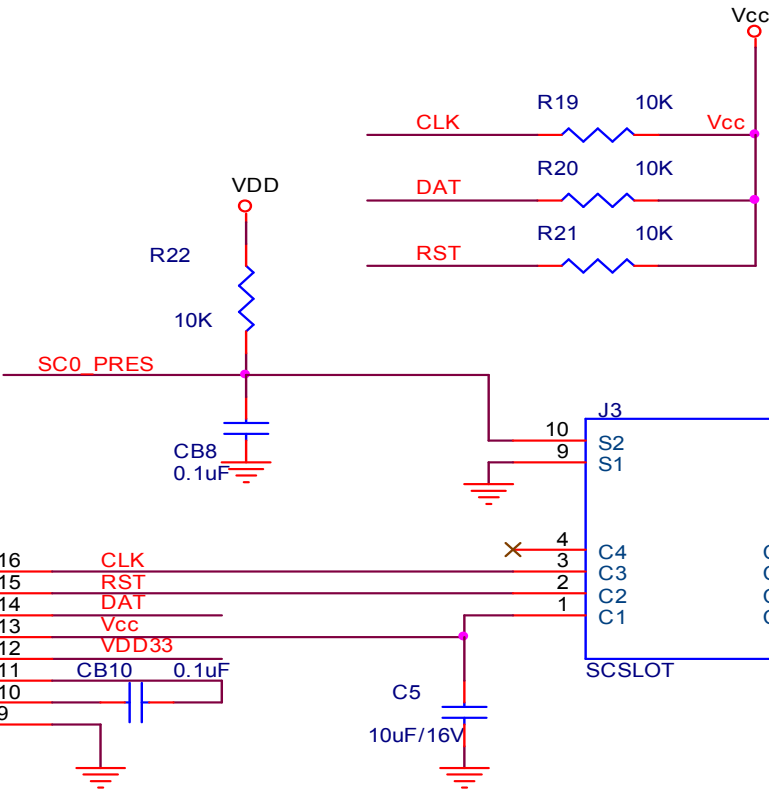
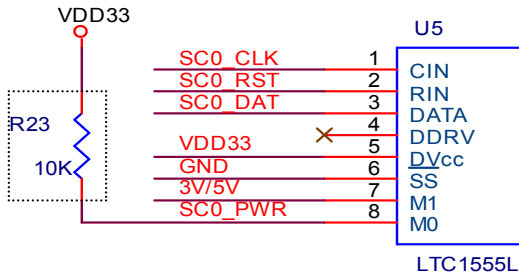
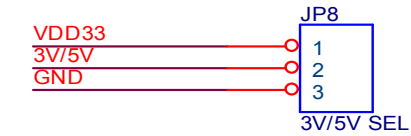
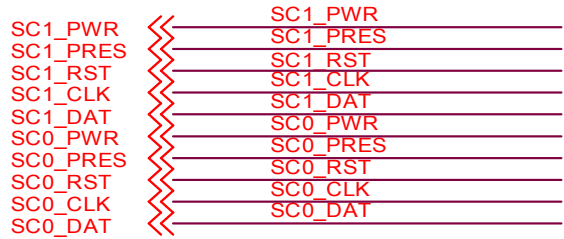
SD CARD



EXT. DMA CON.

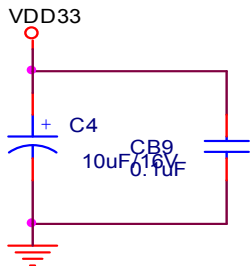


Title		
<Title>		
Size	Document Number	Rev
A	<Doc>	<Rev Code>
Date:	星期一, 二月 06, 2006	Sheet 5 of 13

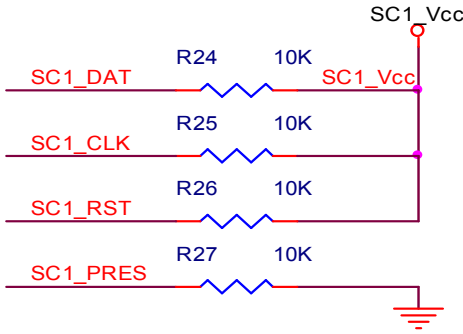
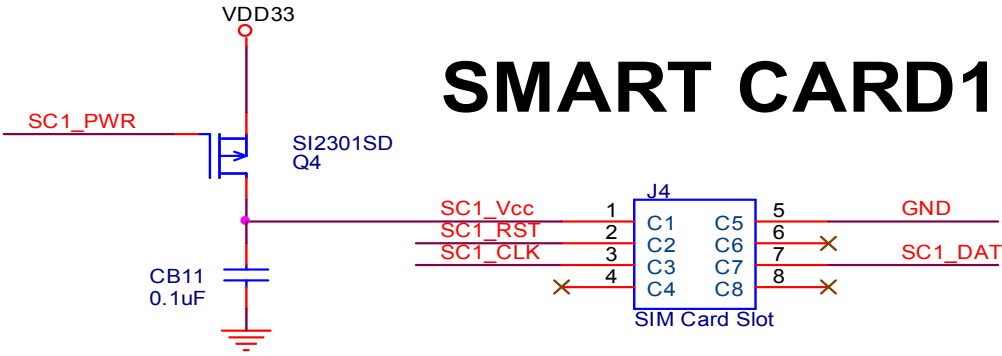


# SMART CARD0

M0	M1	OPERATING MODE
0	0	SHUT DOWN
0	1	Vcc=VIN
1	0	Vcc=3V
1	1	Vcc=5V

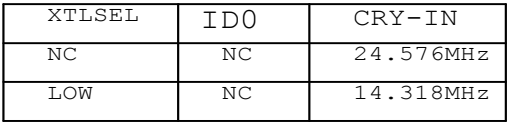


# SMART CARD1

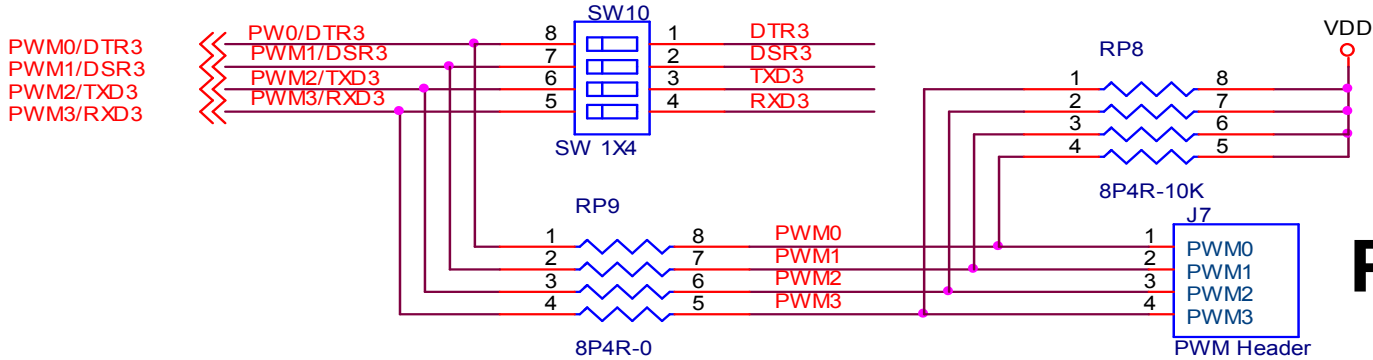


Title <Title>		
Size A	Document Number <Doc>	Rev <Rev Code>
Date:	星期四, 十二月 22, 2005	Sheet 6 of 13

# AC-97

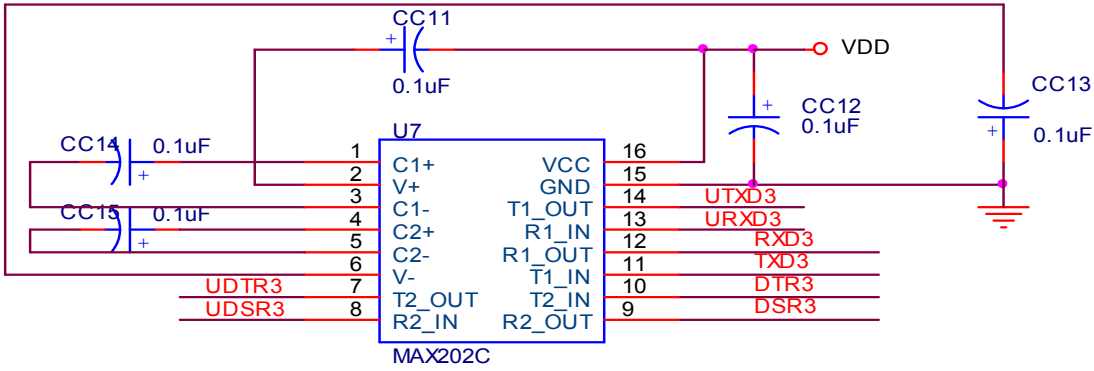


Title <Title>					
Size	Document Number				Rev
Custom	<Doc>				<Rev Code>
Date:	星期四, 十二月 22, 2005			Sheet     7     of     13	

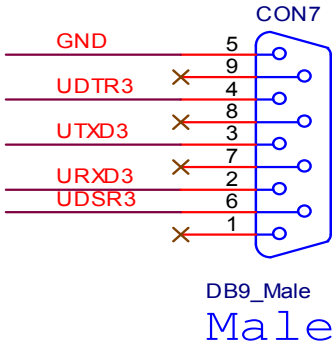


PWM CON.

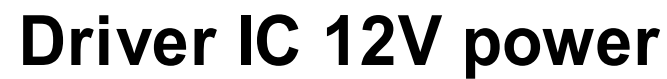
UART3



(UARTC)

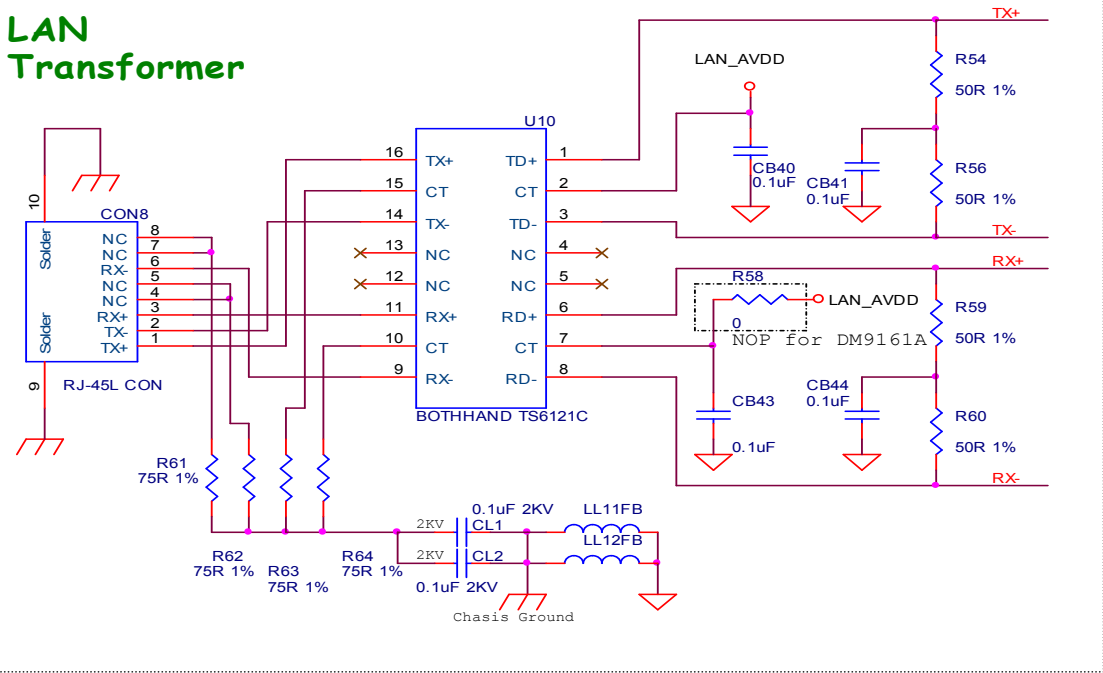


Title		
<Title>		
Size	Document Number	Rev
A	<Doc>	<Rev Code>
Date:	星期四, 十二月 22, 2005	Sheet 8 of 13

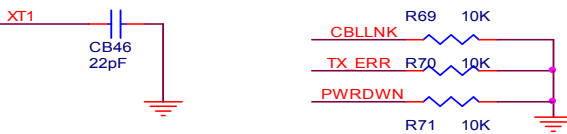
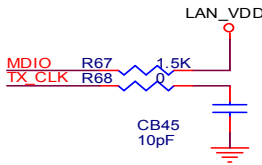
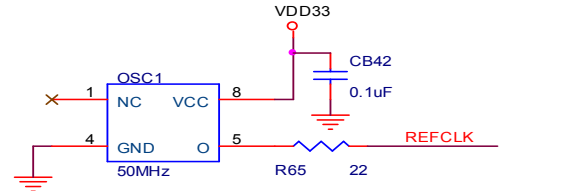
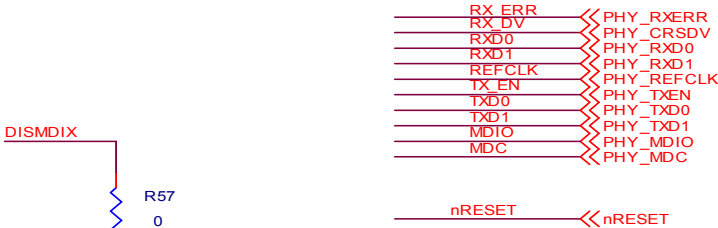
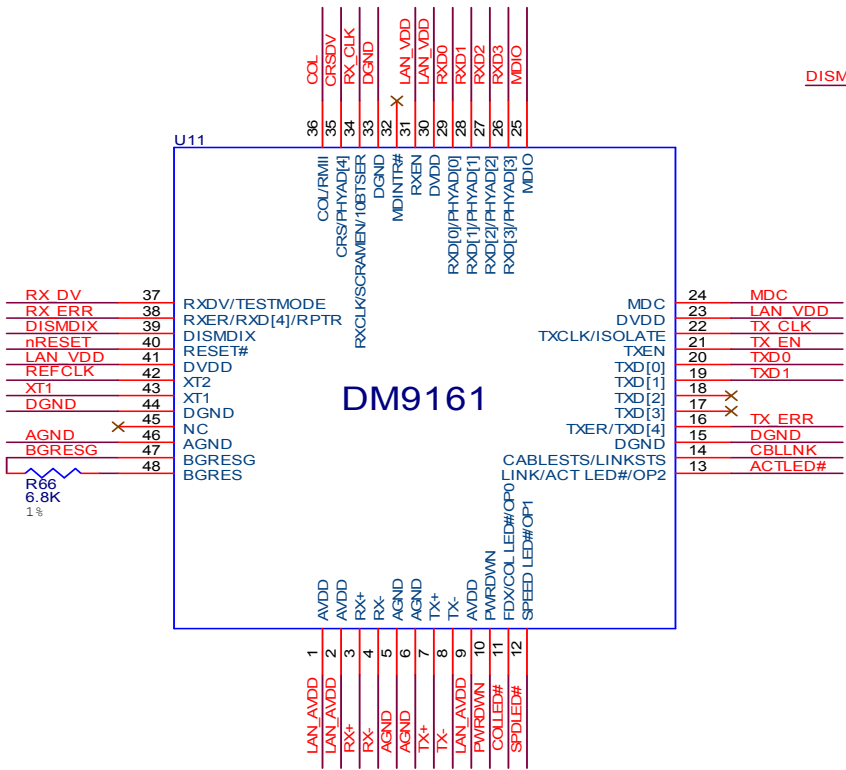


Title <Title>			
Size A	Document Number <Doc>		Rev <Rev Code>
Date:	星期一, 一月 23, 2006	Sheet	9 of 13

LAN Transformer

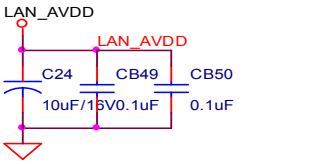
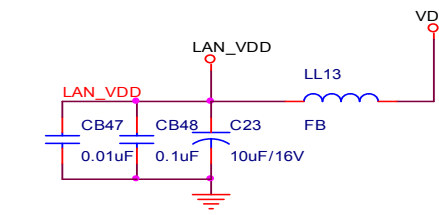
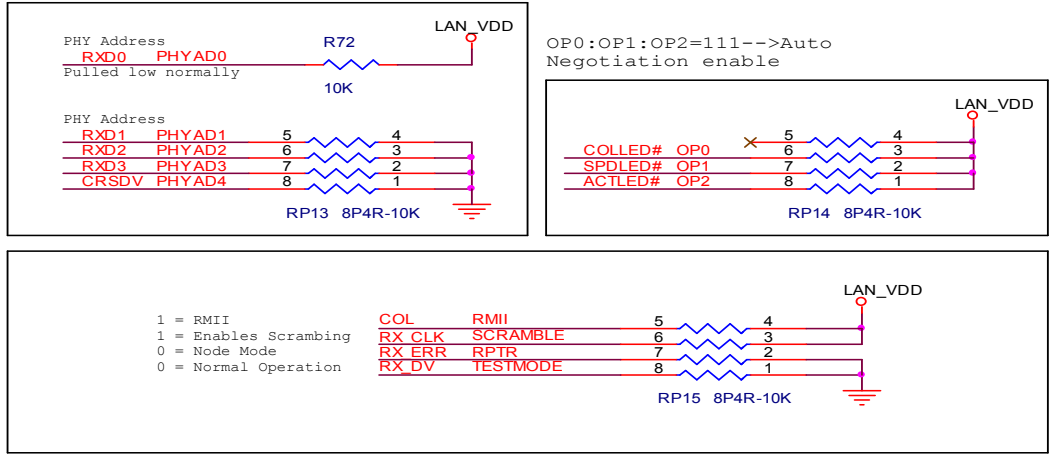


ETHERNET

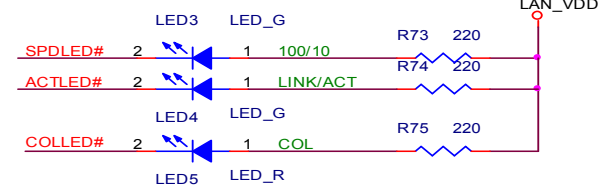


Power-on Reset Settings Latched Inputs

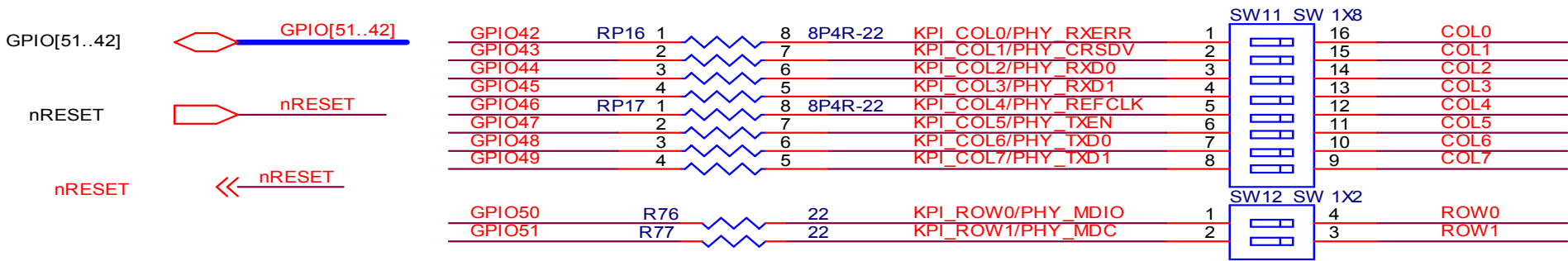
PHY address-->00001H



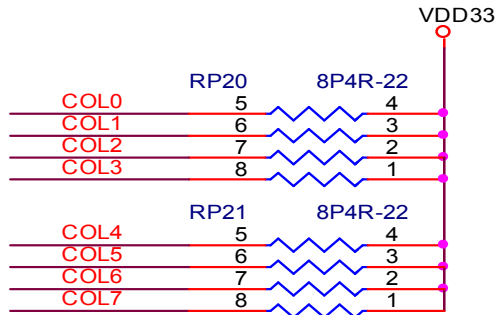
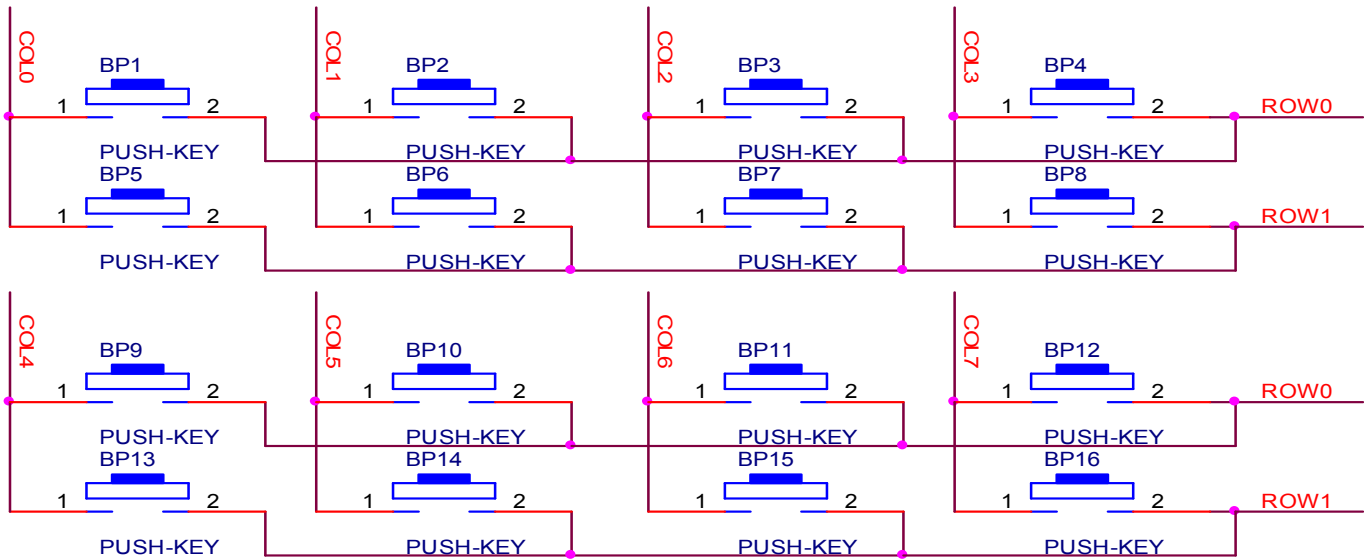
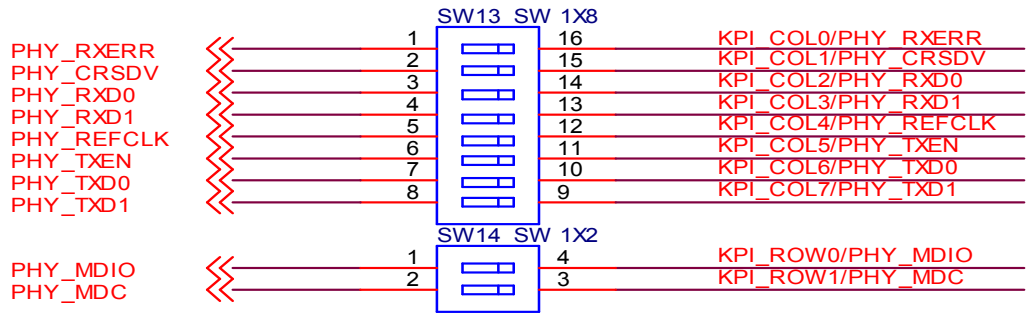
LAN PORT LED



Title			
W90P710 AP board			
Size			Rev
CustomDoc			<Rev Code>
Date:	Thursday, February 08, 2007	Sheet	10 of 13

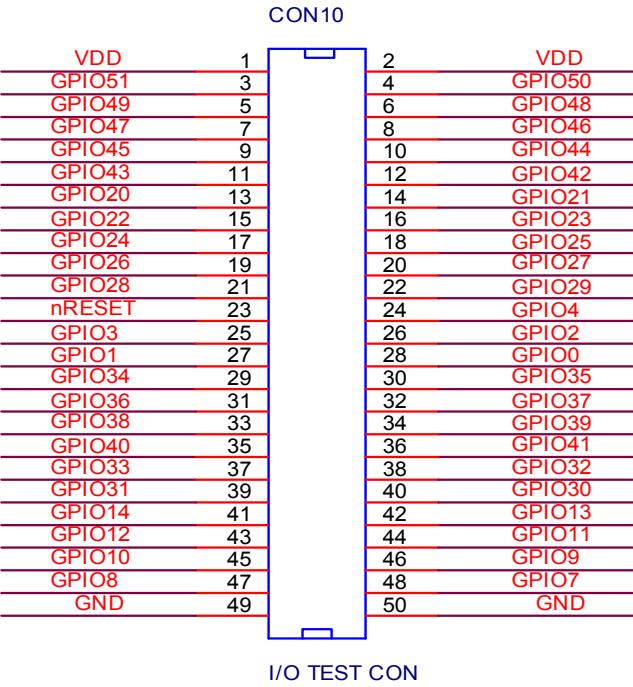
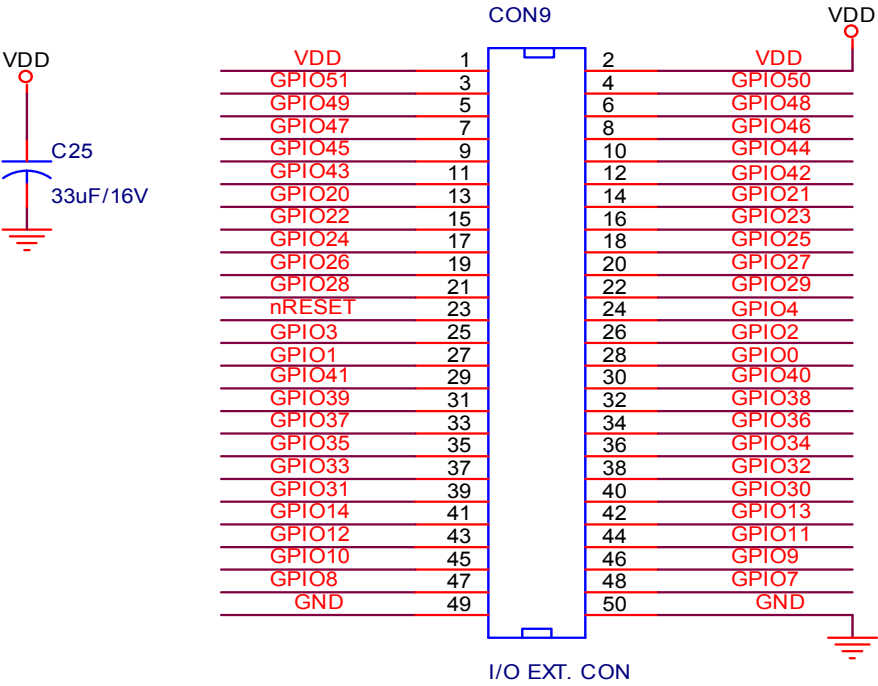
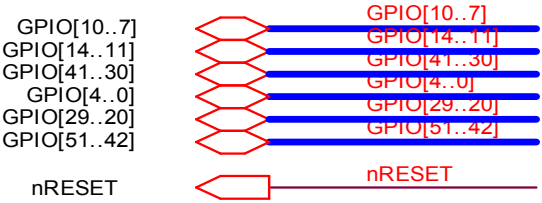


KEY BOARD  
INTERFACE



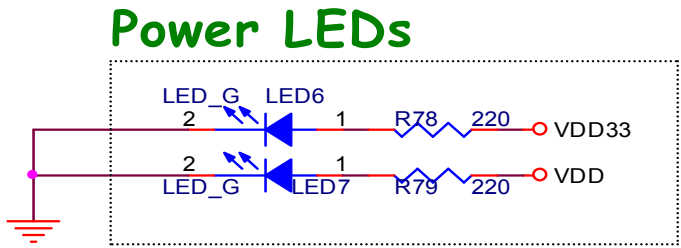
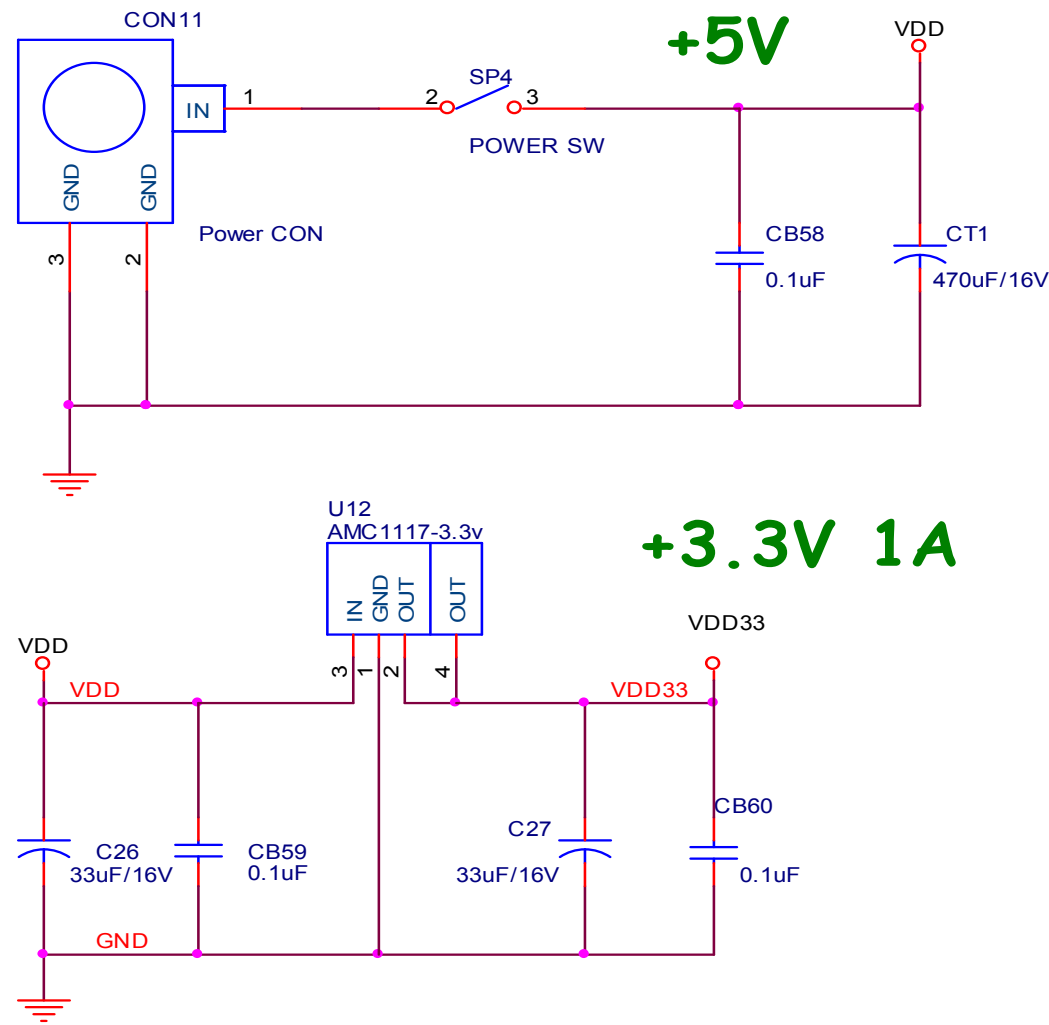
Title		
<Title>		
Size	Document Number	Rev
A	<Doc>	<Rev Code>
Date:	星期一, 二月 06, 2006	Sheet 11 of 13

I/O EXT. CONNECTOR



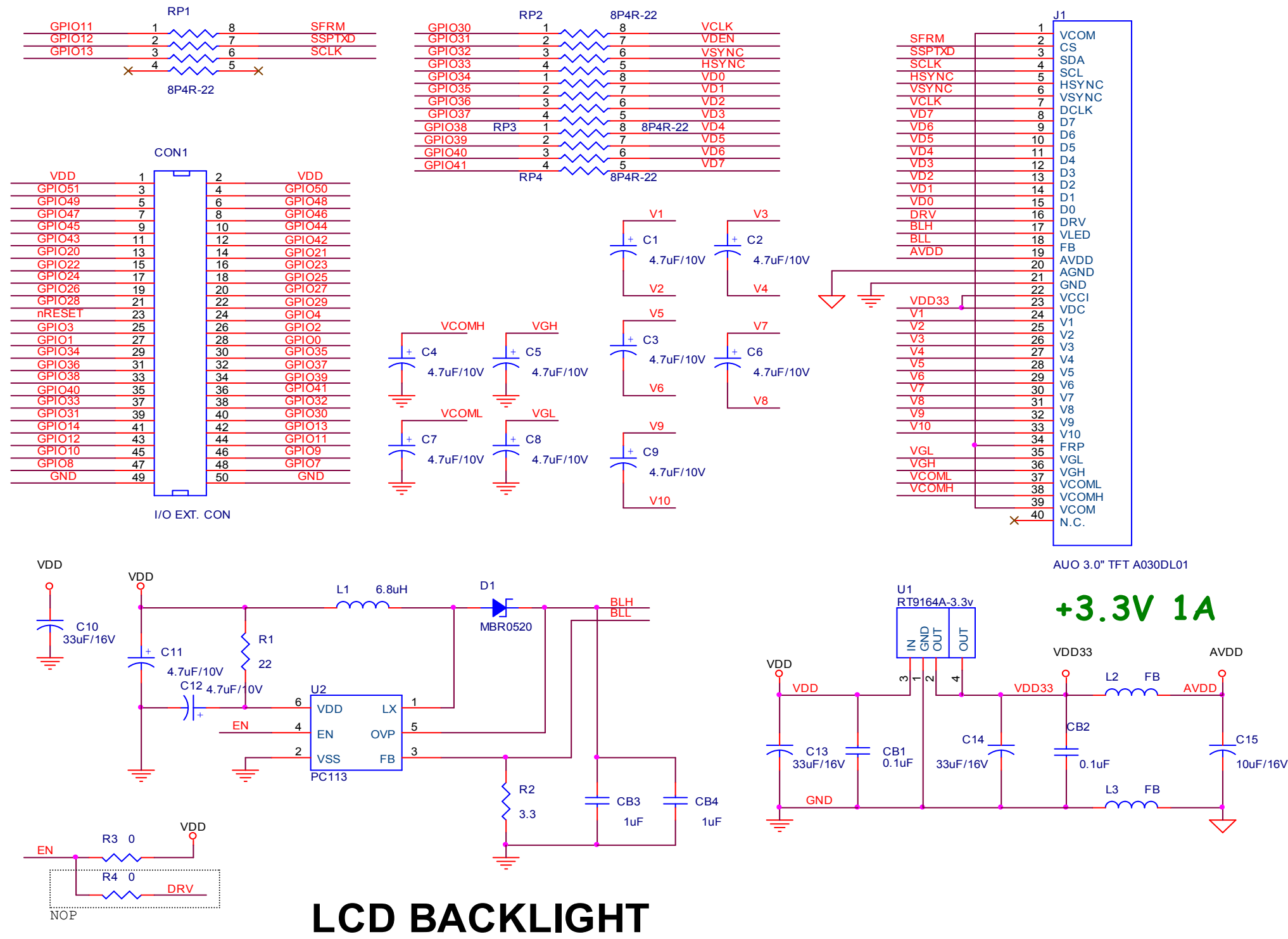
Title		
<Title>		
Size	Document Number	Rev
A	<Doc>	<Rev Code>
Date:	星期四, 三月 09, 2006	Sheet 12 of 13





Title		
<Title>		
Size	Document Number	Rev
A	<Doc>	<Rev Code>
Date:	星期四, 十二月 22, 2005	Sheet 13 of 13

4.3 AUO TFT panel board



LCD BACKLIGHT

### 5. BOM LIST

#### 5.1 Core Module board

Bill of Materials January 10, 2006 18:16:18 Page1

Item	Quantity	Reference	Part
1	1	CAP1	100uF/16V
2	32	CB1,CB2,CB3,CB4,CB5,CB6, CB7,CB8,CB9,CB10,CB11, CB12,CB13,CB14,CB15,CB16, CB17,CB18,CB19,CB20,CB21, CB22,CB23,CB24,CB25,CB26, CB27,CB28,CB29,CB30,CB31, CB32	0.1uF
3	5	CC1,CC2,CC3,CC4,CC5	1uF/16V
4	1	CD1	22nF
5	1	CD2	0.01uF
6	4	CD3,CD4,CD5,CD6	20pF
7	1	CON1	EBI EXT. CON
8	1	CON2	EBI ADDRESS EXT. CON
9	1	CON3	I/O EXT. CON
10	1	CON4	JTAG-14
11	1	CON5	Power JACK
12	1	CON6	DSUB-9
13	1	CON7	USB A-TYPE
14	1	CON8	Mimi USB B-TYPE
15	5	C1,C2,C5,C9,C10	33uF/16V
16	9	C3,C4,C6,C7,C8,C11,C12, C13,C14	22uF/10V
17	2	JP2,JP115M/80M	
18	2	LED2,LED1	RED_LED
19	3	LED3,LED4,LED5	GREEN_LED
20	9	LL1,LL2,LL3,LL4,LL5,LL6, LL7,LL8,LL9	FB

## EVB USER NANUAL

21	1	RP1	8P4R-10K	
22	13	RP2,RP3,RP4,RP5,RP6,RP7, RP8,RP9,RP10,RP11,RP12, RP13,RP14	8P4R-22	
23	1	RP15	8P4R-4.7K	
24	6	R1,R3,R4,R13,R14,R15	10K	
25	7	R2,R5,R7,R10,R18,R33,R34	0	
26	7	R6,R25,R26,R28,R29,R30, R32	4.7K	
27	2	R8,R9	220	
28	4	R11,R12,R36,R37	1K	
29	2	R17,R16	15K	
30	1	R19	1.5K	
31	2	R27,R20	22	
32	4	R21,R22,R23,R24	27	
33	1	R31	1M	
34	1	R35	10M	
35	2	SP1,SP2	SW PUSHBUTTON	
36	3	TP1,TP2,TP3	TEST POINT	
37	1	U1	74LS08	
38	1	U2	SP705	
39	2	U4,U3	W986416EH	
40	1	U5	W19B/L320S	
41	1	U6	AMC1117-3.3v	
42	1	U7	RT9193-1.8v	
43	1	U8	SP232ECA	
44	1	U9	AMC3526H	
45	1	U10	NUC710	
46	1	X1	15MHz Crystal	
47	1	X2	32.768KHz Crystal	

### 5.2 Application board

Bill of Materials      February 22, 2006      10:57:50      Page1

Item	Quantity	Reference	Part
1	16	BP1,BP2,BP3,BP4,BP5,BP6, BP7,BP8,BP9,BP10,BP11, BP12,BP13,BP14,BP15,BP16	PUSH-KEY
2	2	CB2,CB1	47pF
3	12	CB3,CB6,CB29,CB30,CB31, CB32,CB33,CB34,CB35,CB37, CB38,CB39	1uF
4	42	CC1,CC2,CC3,CC4,CB4,CC5, CB5,CC6,CC7,CB7,CC8,CB8, CC9,CB9,CC10,CB10,CC11, CB11,CC12,CC13,CC14,CC15, CB19,CB36,CB40,CB41,CB42, CB43,CB44,CB48,CB49,CB50, CB51,CB52,CB53,CB54,CB55, CB56,CB57,CB58,CB59,CB60	0.1uF
5	4	CB12,CB14,CB25,CB46	22pF
6	13	CB13,CB15,CB16,CB17,CB18, CB20,CB21,CB22,CB23,CB24, CB26,CB27,CB28	1nF
7	1	CB45	10pF
8	1	CB47	0.01uF
9	2	CL2,CL1	0.1uF 2KV
10	2	CON3,CON1	EBI TEST CON
11	2	CON2,CON4	EBI EXT. CON
12	2	CON5,CON7	DB9_Male
13	1	CON6	PS/2 CON
14	1	CON8	RJ-45L CON
15	1	CON9	I/O EXT. CON

## EVB USER NANUAL

16	1	CON10 I/O TEST CON
17	1	CON11 Power CON
18	1	CT1 470uF/16V
19	2	C2,C1 33uF/10V
20	13	C3,C4,C5,C6,C7,C8,C9,C10, 10uF/16V C11,C12,C13,C23,C24
21	1	C14 10uF/50V
22	7	C15,C16,C18,C19,C20,C21, 4.7uF/10V C22
23	1	C17 2.2uF/10V
24	3	C25,C26,C27 33uF/16V
25	1	D1 RB521S-30
26	2	D3,D2 MBR0520
27	1	JP1 UTXD SEL
28	1	JP2 URXD SEL
29	1	JP3 RTS1/RXD2 SEL
30	1	JP4 CTS1/TXD2 SEL
31	1	JP5 UART/PS2_CLK SEL
32	1	JP6 UART/PS2_DAT SEL
33	1	JP8 3V/5V SEL
34	1	J1 1X2_HEADER_2.54
35	1	J2 SD/MMC SOCKET
36	1	J3 SCSLOT
37	1	J4 SIM Card Slot
38	1	J5 MICROPHONE
39	1	J6 PHONEJACK STEREO SW
40	1	J7 PWM Header
41	1	J8 COM25T2171T
42	1	J9 BACKLIGH
43	11	LED1,LED2,LED5,LED8,LED9, LED_R LED10,LED11,LED12,LED13, LED14,LED15
44	4	LED3,LED4,LED6,LED7LED_G
45	16	LL1,LL2,LL3,LL4,LL5,LL6, FB LL7,LL8,LL9,LL10,LL11,

## EVB USER MANUAL

		LL12,LL13,LL14,LL15,LL16	
46	2	L1,L2 6.8uH	
47	1	OSC1 50MHz	
48	2	Q1,Q2 2N3904	
49	2	Q4,Q3 SI2301SD	
50	7	RP1,RP8,RP13,RP14,RP15, RP20,RP21	8P4R-10K
51	10	RP2,RP3,RP4,RP5,RP7,RP10, RP11,RP12,RP16,RP17	8P4R-22
52	1	RP6 8P4R-4.7K	
53	1	RP9 8P4R-0	
54	2	RP19,RP18 8P4R-220	
55	1	RR1 0-20K	
56	11	R1,R2,R14,R15,R16,R17, R39,R44,R45,R46,R47	4.7K
57	4	R3,R6,R7,R38 1K	
58	3	R4,R5,R29 2.2K	
59	7	R8,R9,R73,R74,R75,R78, R79	220
60	2	R11,R10 3.3k	
61	8	R12,R13,R28,R49,R50,R65, R76,R77	22
62	1	R18 33	
63	13	R19,R20,R21,R22,R23,R24, R25,R26,R27,R69,R70,R71, R72	10K
64	12	R30,R32,R33,R41,R42,R43, R51,R55,R57,R58,R68,R81	0
65	1	R31 22K	
66	2	R37,R34 100	
67	2	R36,R35 220K	
68	1	R40 100K	
69	1	R48 560K	
70	1	R52 10	

## EVB USER NANUAL

71	1	R53	3.3	
72	4	R54,R56,R59,R60	50R	1%
73	4	R61,R62,R63,R64	75R	1%
74	1	R66	6.8K	
75	1	R67	1.5K	
76	1	SP1	Vol-Mute	
77	1	SP2	Vol-Down	
78	1	SP3	Vol-Up	
79	1	SP4	POWER SW	
80	5	SW1,SW2,SW3,SW9,SW10	SW	1X4
81	4	SW4,SW6,SW11,SW13	SW	1X8
82	4	SW5,SW7,SW12,SW14	SW	1X2
83	1	SW8	SW	1X5
84	3	U1,U2,U7	MAX202C	
85	1	U3	24LC64	
86	1	U4	W25P10/20/40	
87	1	U5	LTC1555L	
88	1	U6	ALC203	
89	2	U8,U9	PC113	
90	1	U10	BOTHHAND TS6121C	
91	1	U11	DM9161	
92	1	U12	AMC1117-3.3v	
93	1	U13	74F373	
94	1	U14	74LV1G04	
95	1	X1	24.576MHz Crystal	



## EVB USER MANUAL

### 5.3 AUO 3" TFT panel module board

Bill Of Materials      May 2,2006      17:58:50      Page1

Item	Quantity	Reference	Part
1	2	CB1,CB2	0.1uF
2	2	CB3,CB4	1uF
3	1	CON1	I/O EXT. CON
4	11	C1,C2,C3,C4,C5,C6,C7,C8, C9,C11,C12	4.7uF/10V
5	3	C10,C13,C14	33uF/16V
6	1	C15	10uF/16V
7	1	D1	MBR0520
8	1	J1	AUO 3.0" TFT A030DL01
9	1	L1	6.8uH
10	2	L3,L2	FB
11	4	RP1,RP2,RP3,RP4	8P4R-22
12	1	R1	22
13	1	R2	3.3
14	2	R3,R4	0
15	1	U1	RT9164A-3.3v
16	1	U2	PC113

## EVB USER NANUAL

### Important Notice

Nuvoton products are not designed, intended, authorized or warranted for use as components in systems or equipment intended for surgical implantation, atomic energy control instruments, airplane or spaceship instruments, transportation instruments, traffic signal instruments, combustion control instruments, or for other applications intended to support or sustain life. Further more, Nuvoton products are not intended for applications wherein failure of Nuvoton products could result or lead to a situation wherein personal injury, death or severe property or environmental damage could occur.

Nuvoton customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Nuvoton for any damages resulting from such improper use or sales.

---

*Please note that all data and specifications are subject to change without notice.  
All the trademarks of products and companies mentioned in this datasheet belong to their respective owners.*